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DUCK JAY

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COVERS: Swainson's Hawks, Little Plume district, AB. Photographs by Wilbur Tripp.
(Details are given at the bottom of page 1.)

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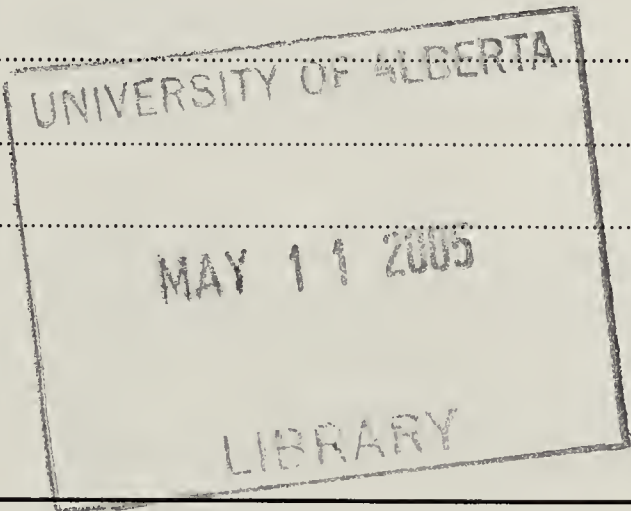
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Detailed captions for front and back cover photographs by Wilbur Tripp

Front: Landing upwind but at a good speed, the male lands on a curved branch of the Chokecherry tree that holds the nest. Both adults are light in colour and we were unable to tell them apart until the pictures were processed and the band sported on the right leg of the female showed up.

Back: Plant material is brought in daily, although it is usually green. Here the female pauses before she places it in the material of the nest. The three-week-old youngster seems mildly interested. Note the muddy feet.

63rd ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT-2004

ALAN R. SMITH, 115 Perimeter Road, Saskatoon SK S7N 0X4 and ROBERT E. JOHANSON, 406 125 5th Avenue N, Saskatoon SK S7K 6A5

The Counts

Although the dates of the Christmas Bird Count have been fixed at 14 December to 5 January since the winter of 2000-2001, few compilers have taken advantage of the days at the beginning of the count period to conduct counts. This year was no exception as only 15 counts were conducted on or before the weekend of December 17-18. That weekend was the last hurrah for the fall-like weather. By Monday, December 19, true winter weather arrived with a vengeance. As you can imagine, a change for the worse in the weather can have a measurable influence on the number of bird species seen; counts taken on or before December 18th averaged 20 species, those after that date averaged 18 species.

Four new counts were established this year. They are Cherry Lake (south of Indian Head), Churchbridge, McNutt and Morse. After absences of two or more years, we welcome the return of counts conducted at Grenfell, Kyle, Little Manitou Lake and Moose Jaw. All in all, 607 observers in 99 localities participated in the Christmas Bird Count this winter.

Two counts, Indian Head and Kamsack, included in this year's tabulations do not represent one day counts but consist of observations made over a period of days during the count period. This information is valuable and should be submitted, but because it is not comparable to the results of the other counts, which are from one day only, it will not, in future, be tabulated with

the other results. The same applies to count results from more than one count location or observations made outside the count period.

The birds

Just over 155,000 birds of 103 species were recorded on count day. An additional three species were recorded during the count period. For the third consecutive year Saskatoon led all counts with 46 species on count day plus another four during the count period. This ties their previous count day total, but exceeds the count period record by one species.

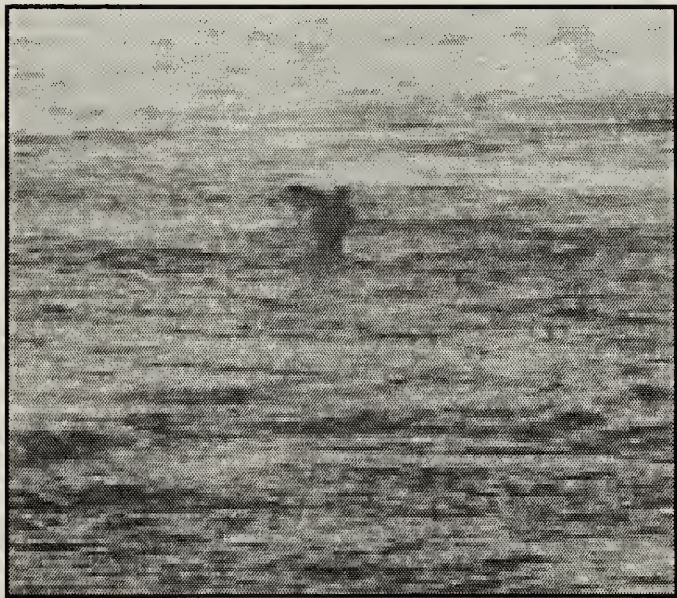
Population trends

Canada Goose and Mallard numbers were up, due mainly to the return of the Coronach count (Table 7). Upland game birds returned to earth from their unprecedented numbers last year. Diurnal raptor numbers were stable except that no Gyrfalcons were identified with certainty for the first time since 1986. Most owls showed increases, with record high counts set for both Great Horned and Short-eared Owls at Kyle.

The news was mixed for boreal forest passerines with Northern Shrikes and Brown Creepers way up, while Gray Jays and Boreal Chickadees were way down. Open country passerines, Horned Larks, Snow Buntings and Lapland Longspurs, were all up over last year. Although still seen in small numbers, record high counts were set or tied for all three of our common species of *Zonotrichia* sparrow (Table 6).

New Species

Last year we added two species that we did not expect: a Sandhill Crane at Yorkton and a Common Crane at Leader. This year we added two species more likely to be found. The first is the Cackling Goose, which has recently been elevated to species status from the larger Canada Goose, so it was only a matter of time before this species was recorded on a CBC. Only one was seen, however, and it was on the Gardiner Dam count. The other species has long been expected, at least in the Cypress Hills, and this is the American Dipper seen on the Eastend count. There are eleven previous records including one winter record for the species in the province. These two new species bring the all-time Saskatchewan CBC list to 179 species.



American Dipper photographed on the Eastend Count *Robert Gebhardt*

Other rarities

For the second year in a row the Sandhill Crane made an appearance on the count. Two birds were seen during the count period in the Cabri area. Eurasian Collared-Doves continue to increase with 18 at Moose Jaw. Ten McCown's Longspurs on the Coronach count were only the second winter sighting for this species.

[Editors' note: The increasing number of counts each year reflects the dedication of many committed people and this is very gratifying. It also means that tabulating the

count results takes an increasing amount of time. Compilers can help by getting count results to Al Smith as early as possible. Count results that arrive as late as February cause serious delays to preparation of the count results for publication. To facilitate getting the March issue of *Blue Jay* out on time, January 31 has been established as the cut off date; counts that arrive on Al Smith's desk after this date will not be included in the March issue tabulations. It is also a great help to the tabulators when compilers submit results on the form they provide. Many hours of work go into creating the tables of count results and your help in these matters is greatly appreciated by the editors, tabulators and *Blue Jay* readers.]

Count areas and participants

(Names of compilers are in italics).

1. ARCHERWILL. Bill Carlson, Sharren Carlson, Joe Cooper, Joyce Cooper, Doris Dewhurst, Joanne Folstad, Ken Folstad, Gerald Hiron, Susan Hiron, Pauline Hnetka, *Elaine Hughes*, Dorothy Klettberg, Willie Klettberg, Judy Revoy, Stan Revoy.
2. ARMIT. *Val Harris*, Sheila Lamont, Joyce Zak.
3. BANGOR. Allan Bolton, *Lynn Bolton*, John Maddaford, Leslie Maddaford.
4. BETHUNE-DILKE. *Doug Laing*, Vera Laing.
5. BIGGAR. Dale Booth, Mark Pickett, Linda Schnedar, Lorne Sutherland, Brandon Wapple, *Guy Wapple*, Marguerite Wapple, Rob Wapple, Sandra Wapple, Ann Weekes.
6. BIRCH HILLS. Carman Dodge, Margaret Mareschal, *Moe Mareschal*, Bob Mascho, Gayle Mascho, Don Weidl.
7. BRIGHTWATER RESERVOIR. Blanca Xiomara Mora Alvarez, Keith Hobson, Doug Peters, *Alan Smith*.
8. BROADVIEW. *David Chaskavich*, Barbara Weidl, Don Weidl, Lorraine Weidl, Tony Weidl.
9. BROMHEAD. Martin Bailey, *Carol Bjorklund*, John Whitell.
10. CABRI. Don Weidl, *Carman Dodge* (non-participating compiler).
11. CANDLE LAKE. Carman Dodge, Moe Mareschal, *Don Weidl* (non-participating compiler).

12. CHERRY LAKE. Karen Herriot, *Trevor Herriot*, Lorrán Wild, Mike Wild.
13. CHURCHBRIDGE. Elin Johnson, Ron Johnson, *Wally Karam*, Elaine Pollock, John Pollock, Ed Wirth, Gloria Wirth.
14. CLARK'S CROSSING. Carol Blenkin, Arelene Block, Peter Block, Janny Bos, Lucille Bradatsch, Dave Cook, Louise Cook, Yvonne Cuttle, Lorne Duczek, Debby Farrow, Marilyn Haskins, Nola Kornder, Gordon Korshinsky, Margaret Korshinsky, Kay Krueger, Gerard Lahey, Carol Maccan, Audrey MacKenzie, Bill MacKenzie, Kylie McRae, Janet McVittie, Daniel Mosterd, Hilda Noton, Linda Schnedar, Jan Shadick, Stan Shadick, Marten Stoffel, Ruth Welsh, *Michael Williams*, Kay Willson, Phil Willson, Jim Wood.
15. CODETTE LAKE. *Doug Boivin*, Wanda Boivin, Barb Weidl.
16. CORONACH. *Val Harris*, Ron Jensen, Colleen Kessler, Sheila Lamont.
17. CRAVEN. Mary Aird, Betty Binnie, Jared Clarke, Jim Cummings, Lewis Draper, Cliff Elliott, Karen Elliott, Ruth Englund, Bob Ewart, Jon Herriot, *Trevor Herriot*, Paule Hjertaas, Phil Holloway, Gary Howland, Michele Howland, Lauren Mang, Yvonne McKenzie, Barry Mitschke, Kevin Moore, Ron Myers, Curtis Pollock, Jeanette Taylor.
18. CROOKED LAKE. *Boyd Metzler*, John Pollock.
19. CROOKED RIVER. Catherine Mehler, *Margaret Mehler*, Morley Mehler, Irene Unruh.
20. CYPRESS HILLS PROVINCIAL PARK (Centre Block). John Douglas, Ryan Dudragne, Joan Hodgins, Jeff Jensen, Ron Jensen, Amy Krause, Rick Krause, David Larson, Margaret Larson, Sue McAdam, *Melody Nagel-Hisey*, Alma Smith.
21. DUCK LAKE. Keith Hobson, *Alan Smith*, Phil Taylor.
22. DUNDURN. *Alan Smith*, Don Weidl.
23. EASTEND. Robert Gebhardt, June Higgins, Joan Hodgins, Harvey Johnson, Keith Schwett, Heidi Scott, Mary Thompson.
24. EMMA LAKE. Bob Hutchison, Gwen Hutchison, *Deanna Krug*, Norman Krug.
25. ENDEAVOUR. *Norman Harris*.
26. ESTERHAZY-HAZELCLIFFE. Barb Lee, Les Lee, Wayne Provick, *John Simpson*.
27. ESTEVAN. *Val Harris*, Sheila Lamont, Craig Palmer, Rose Walton, Guy Wapple.
28. ESTUARY NORTH. Cathy Cocks, *Dean Francis*, Frances Hartsook, Walter Steinley.
29. FENTON. *Carman Dodge*, Moe Mareschal, Don Weidl.
30. FORT QU'APPELLE. Elizabeth Aitken, James Armstrong, Phyllis Bordass, Doreen Harman, Barbara Hooper, *Ronald Hooper*, Alice Isfan, Lois Lamontagne, Vic Lamontagne, Jack Lowe, Jean McKenna, Allan Mlazar, Florence Pearpoint, Ted Snedker, Fred Warren, Elaine Willox.
31. FORT WALSH. Corlaine Gardner, Rob Gardner, Val Harris, Ron Jensen, Susan McAdam, Wilkes Parsonage, *Guy Wapple*.
32. GARDINER DAM. Greg Fenty, Val Harris, Ron Jensen, Sig Jordheim, Sheila Lamont, Susan McAdam, Marten Stoffel, *Guy Wapple*, Dan Zazelenchuk.
33. GOOD SPIRIT LAKE. *Bill Anaka*, Joyce Anaka, Virginia Baron, Willie Baron, Val Edwards, Phyllis McFaddin, Oney Pollock, Ray Riesz, Lloyd Wilson, Marj Wilson, Julia Wiwchar.
34. GOVENLOCK. *Val Harris*, Ron Jensen, Rick Jones, Sheila Lamont, Susan McAdam, Joe Saville, Guy Wapple.
35. GRASSLANDS NATIONAL PARK. Richard Cherepek, Medea Curteanu, Pat Fargey, Shelley Larson, Brent McDougall, Colin Schmidt, Robert Sissons, *Juanna Thompson*.
36. GRAYSON. Carina Helm, *Charles Helm*, Daniel Helm, John Hickie, Karl Zimmer.
37. GRENFELL. *Jim Elliott*.
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39. HEPBURN. *Phyllis Siemens*.
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42. KAMSACK. Agnes Beitz, Marlon Brock, Fred Chernoff, Norma Chernoff, Jeff Conley, Nell Conley, Lindee Dewores, Pat Fisher, Bill Fraser, Helen Jellson, Russ Jellson, Carol Koenigbaur, Rudy Koenigbaur, Bernie LaRocque, Laura Leoppkey, Sidney Rielkoff, *Isabel Ritchie*, Dave Severson, Elsie Severson, Joan Smandych, Joyce Unlow.

43. KELVINGTON (Roscommon School District). Pat Finnie, *Dianne Sloan*, Marguerite Sloan.

44. KENASTON. *Lawrence Beckie*.

45. KENOSEE LAKE. Boyd Metzler, *Jolm Pollock*.

46. KITCHEN NORTH. *Dallas Fairburn*.

47. KILWINNING. *Ed Driver*, Margaret Driver.

48. KINDERSLEY NORTH. *Jean Harris*, Keith Harris.

49. KINISTINO (HORSESHOE BEND). *Verna Messer*, Dannelle Messer, Doris Verreault, Hubert Verreault.

50. KINLOCH. Elaine Asbjournhus, Wayne Fletcher, *Don Forbes*, Doreen Forbes, Cliff Logan, Doreen Wickstrom.

51. KUTAWAGAN LAKE. *Val Harris*, Sheila Lamont.

52. KYLE. David Hamilton, Sig Jordheim, Darryl Jordheim, Jim Lewis, Gordon Nelson, Yvonne Nelson, Glen Pederson, *Dan Zazelenchuk*.

53. LA RONGE (North). *Dianne Allen*, Sharon Feschuk, Fred Guerin, Peter Mizanski, Kent Pointon, K. Lynn Riese, Alice Robert, John Schisler, Jan Shewchuk.

54. LAST MOUNTAIN LAKE N.W.A. *Val Harris*, Kerry Hecker, Ron Kennedy, Sheila Lamont, Lowell Strauss, Lois Vanthuyne.

55. LEADER NORTH. *Daisy Meyers*.

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79. SALTCOATS. Bill Anaka, Joyce Anaka, Irene Bobyk, Arden Bradford, Joan Farquharson, Walter Farquharson, Jim Jowsey, *Shirley Jowsey*, George Maben, Rob Wilson.

80. SASKATCHEWAN LANDING PROVINCIAL PARK. Val Harris, Ron Jensen, Sig Jordheim, Sheila Lamont, Jim Lewis, *Sue McAdam*, Dan Zazelenchuk.

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83. SHAMROCK. Donna Heinrichs, Gladys Heinrichs, Jill Heinrichs, *Hugh Henry*.

84. SKULL CREEK. Alyson Bennetto, Erin Bennetto, *Ray Bennetto*, Sharon Bennetto,

85. SNOWDEN. Eleanor Bodnaruk, Ann Boehler, Ella Butterfield, Lorne Butterfield, Dale Debler, Sylvia Debler, Diane Friesen, Don Friesen, *Irene Hagel*, Ernie Hall, Audrey Holliday, Bob Olsen, Jeanette Olsen, Jack Pickett, Karen Priestley, Vera Schemenauer, Orville Schwetz, Vicky Schwetz, Bev Smears, Walter Stevenson, Irene White, Les White, Marleen White.

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87. SPINNEY HILL. *Ed Driver*, Margaret Driver.

88. SPRUCE HOME, SW. *Sandra Jewell*, Beth Neal, Dale Neal.

89. SQUAW RAPIDS. *Val Harris*, Sheila Lamont, Marten Stoffel, Guy Wapple.

90. STENEN. *Frances Buryk*, Peter Buryk.

91. SWIFT CURRENT. Evelyn Anderson, Trish Ayrey, James Beatie, Jackie Bolton, Laurent Dudragne, Mary Ann Dudragne, Ryan Dudragne, Kathie Hagman, Leonard Head, Hugh Henry, Jeff Jensen, Julie Jensen, *Ron Jensen*, Vera Lynn Knipfel, Dorine Kreuger, Walter Kreuger, Kim Lamb, Ken Lieir, Darleen Nast, Joe Nast, Ed Nein, Leona Nein, Chet Neufeld, Beth Parchman, Jaynet Payne, Ted Philipchuk, Matthew Smith, Myra Smith, Jared Stephenson, John Stephenson, Irene Stinson, Dan Sawatsky, Dillion Sawatsky, Aaron Thninglestad, Joe Unger, Dave Zacharias, Verdella Zacharias.

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93. TORCH RIVER VALLEY. Ken Blaine, Lorna Blaine, Sylvia Fall, Donalda Kreig, Ron Kreig, *George Lidster*, Jean Lidster, Dale Nelson, Jeannette Nelson, Beatrice Runn, Dave Smith, Karen Smith, Holly Toews, Ruben Toews.

94. TURTLE LAKE. *Merle Robinson*.

95. TURTLEFORD. *Brent Keen*, Marg Uhlig, Hannah Warrington, David Woof.

96. WEYBURN. Martin Bailey, Leo Belanger, Audrey Bennett, Fred Bennett, Carol Bjorklund, Greg Bobbitt, Bob Cameron, Glen Fleming, Millie Fleming, Fred Garner, K. Kendrick, Doyle Thomas, *Val Thomas*, Dorothy Whitell, John Whitell.

97. WHITE BEAR. Darryl Jordheim, Floyd Jordheim, *Sig Jordheim*.

98. WHITEWOOD. Butch Ashfield, Cindy Ashfield, Joe Ashfield, Paul Ashfield, Tom Ede, Wilfred Jordens, Bernice Juzyniec, Felix Juzyniec, Mavis Kay, Ron Kittler, Joyce Kydd, Florence Luhtala, Doreen McPhail, Jean Meadows, Ila Meszaros, *Boyd Metzler*, Donna Mohr, Brenda Pollock, John Pollock, Florence Pritchard, Lenore Santo, Carol Sawatzke, Diane Veresh, Pat Ward, Jean Wilson.

99. YORKTON. *Bill Anaka*, Joyce Anaka, Cliff Dixon, Mavin Fairclough, Cheryl Fraser, Norm Fraser, Bob Graham, Elinor Hjertaas, Jim Jowsey, Shirley Jowsey, Harley Large, Ruth Large, Bob Lavender, Sheila Lavender, Janet Lee, George Mabin, Regina Melnyk, Joyce Muir, Dorothy Skene, Geoff Smith, Ruth Smith, Harold Wilkinson, Lloyd Wilson, Marj Wilson.



January 8, 2005, 9 miles north and 4 miles west of Kyle. There are eight Short-eared Owls in the picture and there were seventeen owls at this site that day.

Dan Zazelenchuk



Three Short-eared Owls that are sitting by the rock on the right side of the group picture above.

Dan Zazelenchuk

Table 1-1 Weather and Conditions

Locality	Date	Minimum Temp. (°C)	Maximum Temp. (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.
Archerwill	Dec 20	-25	-23	40	40	5	5	partly cloudy	snowing
Armit	Jan 4	-24	-21	5	10	15	25		clear
Bangor	Jan 10	-32	-20	8	12	45	50	partly cloudy	clear
Bethune-Dilke	Jan 9	-20	-20		8				clear
Biggar	Dec 27	-20	-15	2	4	5	10	overcast	mostly clear
Birch Hills	Dec 18	-22	-18	1	3	10	15	overcast	overcast
Brightwater Res.	Dec 23	-25	-20	0	15	0	10	clear	partly cloudy
Broadview	Dec 24	-15	-9	10	10	1	2	overcast	overcast
Bromhead	Dec 19	-10	5	3	6	0	0	partly cloudy	cloudy
Cabri	Dec 27	-27	-11	0	0	10	10	clear	clear
Candle Lake	Jan 2	-20	-19	0	1	15	15	overcast	overcast
Cherry Lake	Jan 2	-24		22	22				overcast
Churchbridge	Jan 4	-26		2	5				clear
Clark's Crossing	Dec 18	-17	-15	11	18	5	10	cloudy	partly cloudy
Codette Lake	Jan 2	-24	-20	6	11	20	30	overcast	overcast
Coronach	Jan 2	-26	-24	0	5	5	25	partly cloudy	mostly clear
Craven	Dec 18	-15		20	20			partly cloudy	partly cloudy
Crooked Lake	Dec 17	4	7	35	75	0	10	clear	overcast
Crooked River	Dec 29	-20	-15	0	0			clear	clear
Cypress Hills PP	Dec 29	-4	2	0	1	5	15	mostly clear	mostly clear
Duck Lake	Dec 21	-25	-15	0	0	10	20	mostly clear	overcast
Dundurn	Jan 5	-30	-20	8	8	5	10	clear	clear
Eastend	Jan 3	-19	-11	4	15	10	40	partly cloudy	mostly clear
Emma Lake	Dec 17	0	3	30	55	6	10	partly cloudy	cloudy
Endeavour	Dec 26	-20	-15	3	15	18	26	light fog	overcast
Esterhazy	Dec 18	-22	-13	12	19			overcast	
Estevan	Jan 1	-20	-18	30	40	25	30	overcast	overcast
Estuary North	Jan 2	-26	-22	2	3	13	18	clear	clear
Fenton	Dec 17	2	6	0	25		4	overcast	overcast
Fort Qu'Appelle	Dec 18	-6	-4	5	10	2	3	mostly clear	partly cloudy
Fort Walsh	Dec 18	-2	5	0	3	0	15	partly cloudy	cloudy
Gardiner Dam	Dec 20	-20	-12	5	6	0	3	cloudy	overcast
Good Spirit Lake	Dec 29	-20	-14	2	5	15	22	clear	clear
Govenlock	Dec 19	-5	-3	70	80	0	2	mostly clear	mostly clear
Grasslands NP	Jan 4	-32	-25	0	5	10	30	partly cloudy	partly cloudy
Grayson	Dec 22	-28	-20	0	20	0	5	partly cloudy	partly cloudy
Grenfell	Dec 26	-16	-12	10	10	10	10	overcast	overcast
Harris	Dec 31	-20	-18	4	6	0	15	overcast	overcast
Hepburn	Dec 14	-10	-2	2	5	5	10	mostly clear	mostly clear
Hudson Bay West	Dec 30	-23	-20	20	25	25	30	cloudy	
Indian Head									
Kamsack		very	cold	very	windy		61	overcast	
Kelvington	Dec 29	-15			10		15	partly cloudy	clear
Kenaston	Dec 18	-15	-15	17	17		2	partly cloudy	mostly clear
Kenosee Lake	Dec 29	-10	-6	0	1	10	25	clear	mostly clear
Ketchen North	Dec 26	-23	-16	3	15	20	28	cloudy	light snow
Kilwinning	Dec 18	-21	-16	5	15	4	21	clear	clear
Kindersley North	Dec 27	-8	13		2		5	clear	clear
Kinistino	Jan 2	-22	-22	2	3	12	12	clear	clear
Kinloch	Jan 3	-24	-20	5	10	23	25	mostly clear	mostly clear

Table 1-2 Weather and Conditions

Locality	Date	Minimum Temp. (°C)	Maximum Temp. (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.
Kutawagan Lake	Dec 25	-18	-16	10	20	10	20	overcast	overcast
Kyle	Jan 3	-28	-18	0	18	5	15	overcast	overcast
LaRonge North	Dec 30	-20	-18	10	15		60	overcast	partly cloudy
Last Mountain Lake	Dec 30	-20	-18	20	40	10	25	overcast	overcast
Leader North	Dec 29	-25	-4	0	0	5	10	clear	clear
Little Manitou Lake	Dec 29	-21	-13	0	2	5	20	fog	partly cloudy
Love-Torch River	Dec 27	-33	-22	0	20	12	26	overcast	overcast
Luseland	Jan 5	-28	-14	5	20	5	25	mostly clear	mostly clear
MacDowall	Jan 1	-22	-18		15	10	12	overcast	overcast
MacNutt	Dec 28	-11			15	15	20	clear	clear
Matador	Dec 29	-13	-10	0	30	6	12	clear	mostly clear
Mayview	Dec 21	-30		0	0		30	clear	
Meadow Lake	Dec 26	-21	-18		3	20	35	mostly clear	mostly clear
Moose Jaw	Dec 27	-19	-13		10	2	7	overcast	overcast
Moose Mountain	Dec 22	-24	-19	5	8	0	6	partly cloudy	partly cloudy
Morse	Dec 23	-30	-5	6	10		4	overcast	overcast
Nipawin	Dec 28	-20	-18	6	10	10	13	partly cloudy	overcast
Nisbet Forest NW	Dec 31	-29	-15		3		20	overcast	overcast
Nisbet Forest West	Jan 1	-21	-19	10	20	10	20	overcast	overcast
Pike Lake	Jan 2	-23	-18	8	15	12	20	mostly clear	overcast
Preeceville	Jan 1	-25			40		13	partly cloudy	
Prince Albert	Dec 19	-6	0	5	15	3	10	overcast	overcast
Prince Albert NP	Dec 22	-30	-28	5	10	30	75	clear	clear
Qu'Appelle Dam	Dec 19	2	8	17	40	0	5	mostly clear	cloudy
Raymore	Dec 27	-20	-15	30	40	10	25	overcast	overcast
Regina	Dec 26	-18	-13	13	22	6	15	cloudy	cloudy
Rouleau	Jan 1	-25	-18	28	35	40	50	overcast	overcast
Round Lake	Dec 28	-14	-5	0	5		25	clear	mostly clear
Saltcoats	Dec 28	-19	-11	1	1	4	10	mostly clear	mostly clear
Sask. Landing PP	Dec 21	-18			5	0	10	cloudy	cloudy
Sask. R. Forks	Dec 29	-22	-19	0	2	10	10	clear	clear
Saskatoon	Dec 26	-21	-19	18	24	10	15	overcast	overcast
Shamrock	Dec 18	-8	-6	15	15	0	6	overcast	overcast
Skull Creek	Dec 26	-15	-10	1	2	5	10	mostly clear	partly cloudy
Snowden	Dec 31	-24	-18	1	1	21	27	mostly clear	partly cloudy
Somme	Dec 30	-20	-18	10	14	30	35	overcast	overcast
Spinney Hill	Dec 14	-3	4	5	15	2	15	clear	mostly clear
Spruce Home, SW	Dec 19	-20	5	0	6	5	15		
Squaw Rapids	Jan 5	-26	-18	30	40	20	25	mostly clear	mostly clear
Stenen	Jan 1	-24	-22	5	10		30	partly cloudy	mostly clear
Swift Current	Dec 27	-15	-10	0	5	5	10	overcast	clear
Togo	Jan 3	-24	-18	0	10	25	30	mostly clear	mostly clear
Torch River Valley	Dec 29	-20	-15	0		7	9	mostly clear	mostly clear
Turtle Lake	Dec 21	-30	-25	15	50		12	overcast	overcast
Turtleford	Dec 29	-26	-18	0	5	4	15	overcast	clear
Weyburn	Dec 21	-17	-10	2	5	0	0	partly cloudy	partly cloudy
White Bear	Jan 4	-25	-20	0	0	15	20	clear	clear
Whitewood	Jan 2	-31	-20	5	20	30	70	clear	mostly clear
Yorkton	Dec 18	-20	-18	8	15	6	7	clear	clear

Table 2-1 Coverage

Locality	Effort						Habitat													
	Participants	Km on Foot	Hours on Foot	Km by Vehicle	Hours by Vehicle	Hours at Feeders	Evergreen Forest	Mixed Forest	Deciduous Forest	Aspen / Farmland	Aspen / Prairie	Native Prairie	Tame Pasture	Farmland	Farmstead	Urban	Open Water	Frozen Lake	Riparian	Landfill
Archerwill	14	3	2					40							60					
Armit	3	1	1	112	4	0	20	30	20	20						10				
Bangor	4			30	6					15	15		10		60					
Bethune-Dilke	2			40	4						1	18		80		1				
Biggar	10	10	8	478	18	7				10				57		33				
Birch Hills	6	8	2	222	10	3				30			10	40	10	10				
Brightwater Res.	4	7	3	160	5				15		10	5	5	30	35		5			
Broadview	5	2	2	142	5	3			20	30	10	5	10	10	10	5				
Bromhead	3		1		6							5		90	5					
Cabri	1	1	1	104	7							10		75	10	5				
Candle Lake	2			134	4.7		30	30	30							10				
Cherry Lake	4	8.0	4.0	15	1.0					10	80				10					
Churchbridge	6					9.0									100					
Clark's Crossing	32	29	19	623	28	6.0	1		1	25	2	2	1	18	30	13	7			1
Codette Lake	3	2.0	1.0	92	4.0			5		25				50	20					
Coronach	4	6.0	3.0	162	8.5	0.5				5				30	15	10	40			
Craven	22	13	4.0	345	21					20	20			30	10	20				
Crooked Lake	2	0.5	1.0	36	5.0				40	30				15			15			
Crooked River	4			25	2.5			35						40	25					
Cypress Hills PP	12	15	8.8	50	2.2	4.0	60	20			10	10								
Duck Lake	3	10	3.0	86	5.5		5	35	10	20			5	10		10	5			
Dundurn	2	1.0	0.8	110	7.0				10	10	10	10		40		20				
Eastend	7	10	3.5	84	4.0			15		60	5				5	10	5			
Emma Lake	4	2.0	1.5	52	5.5	7.0		95							5					
Endeavour	1	5.0	5.0	26	1.0	3.0				40					40	20				
Esterhazy	4			12	3.0					30				70						
Estevan	5	3.0	2.5	266	10				15					20	15	30	20			
Estuary North	4	5.0	3.0	75	5.0	2.0			70			10		15	5					
Fenton	3	2.0	0.5	148	5.5	1.5			10	50			5	15	15	5	1			
Fort Qu'Appelle	17	2.0	0.5	220	6.0	12			10	30				30	10	10	10			
Fort Walsh	8	20	16	370	16			61				5		10					24	
Gardiner Dam	9	10	6.3	581	25					1				77			17		5	
Good Spirit Lake	11	1.0	0.5	103	6.5	1.5	5		10	10	5	5	5	50	5	5				
Govenlock	7	7.5	4.3	351	14					5		60		10	25					
Grasslands NP	8	9.0	4.5	131	6.8							65	10	15		10				
Grayson	5	4.0	1.0	60	4.0	1.0			5	40	10			20	10	5	10			
Grenfell		14	3.5											5		95				
Harris	5	4.0	2.5	267	6.8	2.0				24				57		19				
Hepburn	1			64	1.3	1.0				80						20				
Hudson Bay West	19			32	10	12		20						25	25	30				
Indian Head	58																			
Kamsack	22						20	5		10		15	10		40					
Kelvington	3			70	3.5	4.0				30				60	10					
Kenaston	1			110	4.5	1.0					13			80	5	2				
Kenosee Lake	2	0.5	1.5	114	3.0	0.5		5	40	10	5					40				
Ketchen North	1	0.5	2.0	50	2.0	6.0				30			20	20	20	10				
Kilwinning	2	1.0	0.5	170	6.0		10	5	30	60			5							
Kindersley North	2	1.0	0.8	90	4.0									8	30	60	2			
Kinistino	4	2.0	2.0			1.0		30					40		30					
Kinloch	6	9.0	6.0	90	2.0	8.0	20	40							40					

Table 2-2 Coverage

Locality	Effort						Habitat													
	Participants	Km on Foot	Hours on Foot	Km by Vehicle	Hours by Vehicle	Hours at Feeders	Evergreen Forest	Mixed Forest	Deciduous Forest	Aspen / Farmland	Aspen / Prairie	Native Prairie	Tame Pasture	Farmland	Farmstead	Urban	Open Water	Frozen Lake	Riparian	Landfill
Kutawagan Lake	2	2.0	1.0	200	8.0					20	10	10		30	20	10				
Kyle	8	22	5.0	501	21	1.0					2	26	5	63	1	1			2	
LaRonge North	9	8.0	1.5	25	1.3	8.2	70	9	12							9				
Last Mountain Lake	6	1.0	0.5	215	8.5	0.5				10		30		40	10	10				
Leader North	1	5.0	4.0	25	2.0							50		40	10					
Little Manitou Lake	3	5.0	2.0	135	5.5					20	10			30		35	5			
Love-Torch River	16	2.0	1.0	230	12	14	10	10		60					10	10				
Luseland	10	9.0	3.0	224	7.0	4.0				30	10	10	10	20	10	10				
MacDowall	3			65	3.0	3.0		10		80					10					
MacNutt	2	10	1.0	50	3.0															
Matador	2	3.0	1.5	120	4.0						24	70	5	1						
Mayview	2				0.5	2.0		90						10						
Meadow Lake	7	8.0	3.5	55	3.5	5.0		40						30		30				
Moose Jaw	27	26	18	242	21	30	4	5				10			1	80				
Moose Mountain	2	2.0	0.6	123	4.0	0.4			60	25						15				
Morse	7	0.5	0.3	152	4.5	0.3								80	10	10				
Nipawin	16	3.0	1.5	160	7.0	39		20						20		50	10			
Nisbet Forest NW	2					6.8		50							50					
Nisbet Forest West	8		0.5	100	3.5	12	10		30	10				40	10					
Pike Lake	30	29	16	432	26				15	10			5	15	15	40				
Preeceville	3					5.0									100					
Prince Albert	21	36	15	286	15	1.5				5	5				5	85	1			
Prince Albert NP	8	25	7.0				15	40	28							2	15			
Qu'Appelle Dam	8	5.0	5.8	400	10				10	15	20	10	5	10	5	15	10			
Raymore	2	3.0	1.5	188	7.5	0.5				80				10		10				
Regina	27	60	23	530	22	3.0			5	3	5		5	35	12	35	1			
Rouleau	10			10	2.0	6.0										100				
Round Lake	4	2.0	1.0	221	7.5	7.0			40	30				20			10			
Saltcoats	10			500	13	3.0				95						5				
Sask. Landing PP	7	11	6.5	393						5	5	15	15	34	25		1			
Sask. R. Forks	2	3.0	2.0	80	3.2		10	10	20	20	5		5	20	10					
Saskatoon	115	102	58	948	51	124			1	16		1		8	15	50	3		5	1
Shamrock	4			185	10									80	20					
Skull Creek	4			60	4.0	8.0				10	10	10	10	60						
Snowden	23		1.0	91	3.0	4.0		20						20	40	20				
Somme	13	1.0	1.0	160	6.0	3.0		30	10					30	20	10				
Spinney Hill	2	3.0	0.8	130	5.5			10	40	30		10		20						
Spruce Home, SW	3				6.0	6.0								80	20					
Squaw Rapids	4	5.0	5.5	328	11	0.5	8	60	8					7	7		10			
Stenen	2					2.0	10		90											
Swift Current	37	56	22	395	26	47						15	5	64	5	10	1			
Togo	5			50	2		10	30	10	20		10	10	10						
Torch River Valley	14	3.0	1.0	40		10		10							90					
Turtle Lake	1			50		9.0		50	10	10	5	5	5	5	5	5				
Turtleford	4	31	8.0	180	6.0	4.0				70				20	10					
Weyburn	14			227	11	4.5						5		82	5	8				
White Bear	3	4.0		114							20			60				20		
Whitewood	25	3.5	3.0	431	12	59				20					5	75				
Yorkton	24	0.5	0.5	323	18	2.0				10				40		50				

Figure 1. Location of 2004 counts (numbers correspond to those in text under **Count areas** and participants).

Natural Vegetation Zones*

- A. Subarctic Woodland
- B. Northern Boreal Forest
- C. Southern Boreal Forest
- D. Aspen Parkland
- E. Mixed Prairie
- F. Dry Mixed Prairie
- G. Cypress Hills

*adapted from: Thorpe, J. 1999.
Natural Vegetation. P. 133 in
Atlas of Saskatchewan (K. Fung, ed).
Univ. of Sask., Saskatoon.

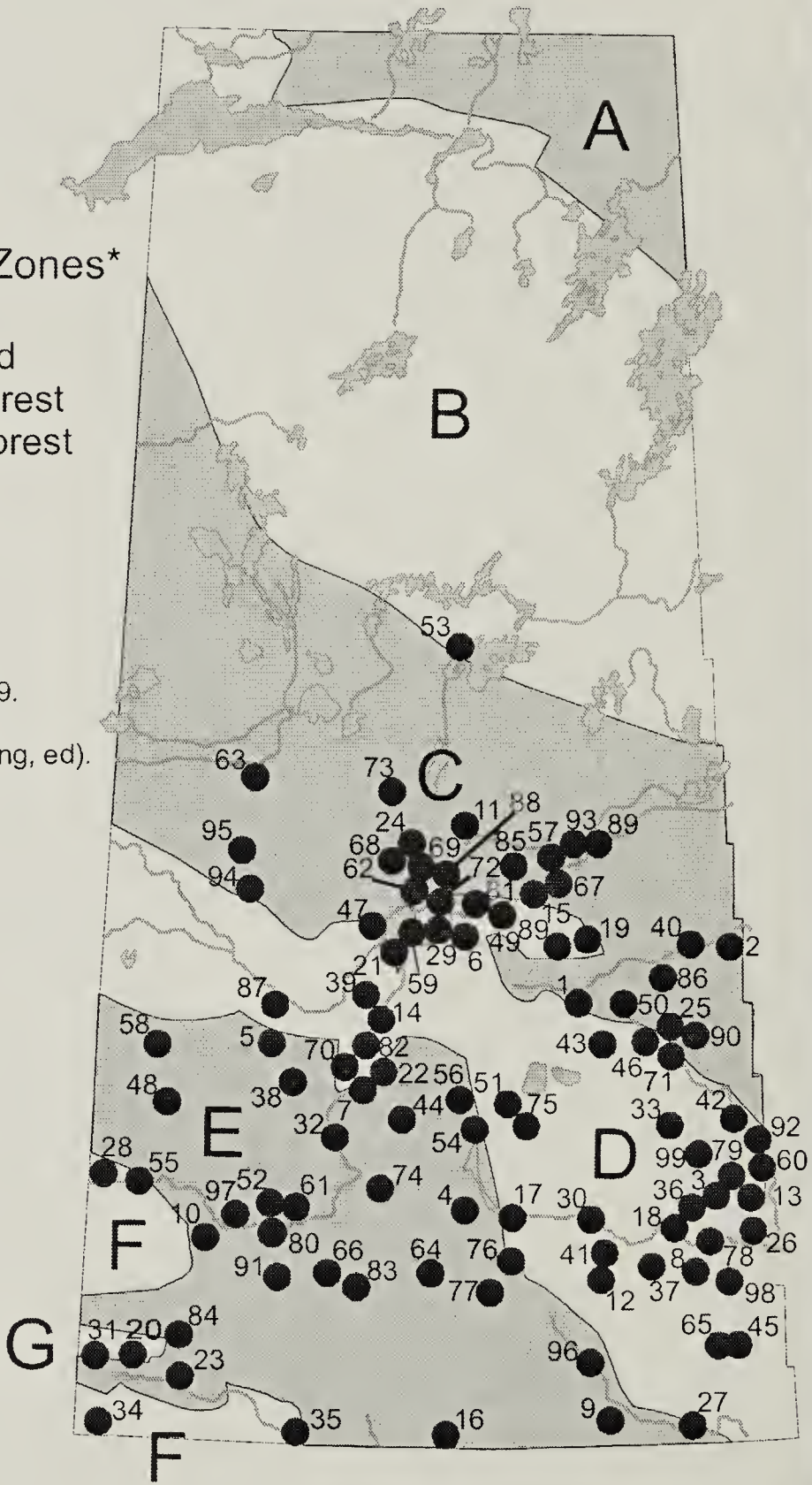


Table 3-1 Species found in 9 or more localities () = seen during count period

	Archerwill 20 Dec 2004	Armit 4 Jan 2005	Bangor 10 Jan 2005	Bethune-Dilke 9 Jan 2005	Biggar 27 Dec 2004	Birch Hills 18 Dec 2004	Brightwater Res. 23 Dec 2004	Broadview 24 Dec 2004	Bromhead 19 Dec 2004	Cabri 27 Dec 2004	Candle Lake 2 Jan 2005	Cherry Lake 2 Jan 2005
Aves												
Canada Goose					1							
Mallard					1							
Common Goldeneye												
Gray Partridge	10		22	14	21		(1)		6			
Ring-necked Pheasant									1	6		
Ruffed Grouse	4	3				4		2				
Sharp-tailed Grouse	3		3	3	100		5	30		10		
Bald Eagle							1			1		
Northern Goshawk						1						
Rough-legged Hawk										2		
Golden Eagle				1	(2)					1		
Merlin					1							
Rock Pigeon			20	16	96	59	18	19	17			16
Great Horned Owl	(1)	1	4		1	1	1	1		3		
Snowy Owl				1	1	2	(1)		2	2		
Northern Hawk Owl	(1)	1			1							
Great Gray Owl		1									3	
Short-eared Owl										3		
Downy Woodpecker	6	1	6		6	7	1	3				1
Hairy Woodpecker	6	1	4		5	4		1				
Northern Flicker				2								
Pileated Woodpecker	2		1									
Northern Shrike	(1)				(2)	(1)		1			1	
Gray Jay	3	4									2	
Blue Jay	23	10			(1)	6	3	1			2	
Black-billed Magpie	4	4	33		124	53	46	30		14	13	3
Common Raven	14	1	13		27	15	5	10			151	2
Horned Lark	(15)				15	8			22	15		
Black-capped Chickadee	44	14	18		47	48	6	35		7	43	7
Boreal Chickadee	3				2						9	
Red-breasted Nuthatch	2	8			6			(1)			1	
White-breasted Nuthatch	3	1	6			1		1				
Golden-crowned Kinglet					4							
European Starling					1				8			
Bohemian Waxwing					99	71	40	32		80		
Cedar Waxwing												
Dark-eyed Junco		4	2									
Snow Bunting	(30)	8	100		3416		2	1	37	100		76
Pine Grosbeak	140	37			1	14	1				3	
House Finch					11			3				
Common Redpoll	127	8	13		67	257	12	42	1		9	
Hoary Redpoll					1							
Pine Siskin		2			7							
Evening Grosbeak	88	68										
House Sparrow	50		75	6	673	77	152	115	211	25		
Total Birds Count Day	533	193	326	43	4735	629	293	340	334	270	238	105
Total Birds Count Period	581	193	326	43	4742	630	295	341	334	272	238	105
Total Species Count Day	19	22	16	7	27	18	14	19	11	15	12	6
Total Species Count Period	24	22	16	7	31	19	16	20	11	16	12	6

Table 3-2 Species found in 9 or more localities () = seen during count period

Aves	Churchbridge 4 Jan 2005	Clark's Crossing 18 Dec 2004	Codette Lake 2 Jan 2005	Coronach 2 Jan 2005	Craven 18 Dec 2004	Crooked Lake 17 Dec 2004	Crooked River 29 Dec 2004	Cypress Hills PP 29 Dec 2004	Duck Lake 21 Dec 2004	Dundurn 5 Jan 2005	Eastend 3 Jan 2005	Emma Lake 17 Dec 2004
Canada Goose		1361		1150		4634						
Mallard				26017		89					11	
Common Goldeneye		45				3						
Gray Partridge		57	11	38	9					24	19	
Ring-necked Pheasant								1			7	
Ruffed Grouse												
Sharp-tailed Grouse		20	2	24	17			3	3		2	
Bald Eagle		1	1		1	3		1			1	
Northern Goshawk									2			
Rough-legged Hawk		1										
Golden Eagle					2	1		1			3	
Merlin		1										
Rock Pigeon		119		81	201	44			55	1	10	
Great Horned Owl		11		3						2		
Snowy Owl		3		3	1					1		
Northern Hawk Owl												
Great Gray Owl			1									
Short-eared Owl		1										
Downy Woodpecker	5	3		1	8	1	2	2		1	10	2
Hairy Woodpecker	6	10	3		8	3	2	5	2	(1)	2	2
Northern Flicker					1						3	
Pileated Woodpecker			1									
Northern Shrike					3	1					1	
Gray Jay			1									(1)
Blue Jay			3		7		4	1	1	1	2	11
Black-billed Magpie	3	383	17	1	85	18	3	16	18	58	34	
Common Raven	3	31	26		19	17	5	2	30	7		104
Horned Lark		1		384		1				19	5	
Black-capped Chickadee	45	119	12		86	51	9	49	18	21	26	117
Boreal Chickadee									6			3
Red-breasted Nuthatch		3			2			17			2	9
White-breasted Nuthatch	2				11	2		1				4
Golden-crowned Kinglet					7			11			1	
European Starling		15		5	32			3		1		
Bohemian Waxwing	10	406		7	58			2		4	45	
Cedar Waxwing								24			6	
Dark-eyed Junco	1										20	
Snow Bunting		35		45	1		74	25	25	457		
Pine Grosbeak		10					8	1	13		2	10
House Finch		33		4	7						60	
Common Redpoll	25	67	100	1	80	50	14	48	60		131	92
Hoary Redpoll							15					
Pine Siskin			7		(2)			18				
Evening Grosbeak			8				10					36
House Sparrow	30	2254	1	180	608	66		10	95	28	14	30
Total Birds Count Day	130	4993	236	28012	1264	4989	146	266	332	625	456	420
Total Birds Count Period	130	4993	236	28012	1267	4989	146	266	332	626	457	423
Total Species Count Day	10	28	16	23	24	20	11	28	15	14	30	12
Total Species Count Period	10	28	16	23	26	20	11	28	15	15	31	15

Table 3-3 Species found in 9 or more localities () = seen during count period

Aves	Endeavour 26 Dec 2004	Esterhazy 18 Dec 2004	Estevan 1 Jan 2005	Estuary North 2 Jan 2005	Fenton 17 Dec 2004	Fort Qu'Appelle 18 Dec 2004	Fort Walsh 18 Dec 2004	Gardiner Dam 20 Dec 2004	Good Spirit Lake 29 Dec 2004	Govenlock 19 Dec 2004	Grasslands NIP 4 Jan 2005	Grayson 22 Dec 2004
Canada Goose			566			3251		2563				85
Mallard			77	200		26	1	5150				20
Common Goldeneye			6			5		62				
Gray Partridge		4		18	23		21	61		32	24	
Ring-necked Pheasant			3	20			4			7		
Ruffed Grouse	1				1	(1)	2		3			1
Sharp-tailed Grouse		12		50			10	6	1		20	9
Bald Eagle						1	5	17	(1)	1		
Northern Goshawk				3	(1)		2					
Rough-legged Hawk			1				3	1		2		
Golden Eagle						(1)	1	1		1	3	
Merlin						(1)						
Rock Pigeon	5		46	21	2	67		19	2		18	129
Great Horned Owl				3	(1)	1	2	6	1	2		
Snowy Owl							1			1		
Northern Hawk Owl	1											
Great Gray Owl												
Short-eared Owl				1							2	
Downy Woodpecker		2	1		3	8	2	1	8			2
Hairy Woodpecker	4	2		1	1	9	2	1	6			3
Northern Flicker												
Pileated Woodpecker				1					1			
Northern Shrike						1	3			1	1	1
Gray Jay												
Blue Jay	(1)	(1)		5	6	7		3	19			11
Black-billed Magpie	7	10	1	42	35	29	86	81	26	28	20	31
Common Raven	50	4	1		21	12		3	27	1		29
Horned Lark			3	50	4		3	18	2	86	300	
Black-capped Chickadee	12	9	4	10	48	38	59	13	88			39
Boreal Chickadee					1							
Red-breasted Nuthatch		1	(1)			2	4	1	1			2
White-breasted Nuthatch	2		1		2	10			2			(1)
Golden-crowned Kinglet					2		1	1				
European Starling			2				7			4		3
Bohemian Waxwing			54	400	51	60	36		250			8
Cedar Waxwing												
Dark-eyed Junco				1			8	1				
Snow Bunting	50		37	126		(5)	420	1311	52	28	359	
Pine Grosbeak	16			9		(5)	12	6	12			
House Finch		(1)	3			7		1				
Common Redpoll	8	35	15		128	9	81	33	63	22	16	602
Hoary Redpoll							2					
Pine Siskin						4						
Evening Grosbeak	2											
House Sparrow	(1)	21	121	8	30	117	190	528	72	136		9
Total Birds Count Day	160	100	945	970	358	3686	1017	10022	636	355	812	984
Total Birds Count Period	162	102	961	970	360	3708	1017	10022	637	355	812	985
Total Species Count Day	14	10	20	20	16	22	37	35	19	17	12	17
Total Species Count Period	16	12	24	20	18	31	37	35	20	17	12	18

Table 3-4 Species found in 9 or more localities () = seen during count period

Aves	Grenfell 26 Dec 2004	Harris 31 Dec 2004	Hepburn 14 Dec 2004	Hudson Bay West 30 Dec 2004	Indian Head	Kamsack	Kelvington 29 Dec 2004	Kenaston 18 Dec 2004	Kenosee Lake 29 Dec 2004	Ketchen North 26 Dec 2004	Kilwinning 18 Dec 2004	Kindersley North 27 Dec 2004
Canada Goose					3010							
Mallard					150							
Common Goldeneye					1							
Gray Partridge		32			89	6		11			1	27
Ring-necked Pheasant												
Ruffed Grouse				2	1					5		
Sharp-tailed Grouse		4		6	164						6	
Bald Eagle				(1)	22							
Northern Goshawk						3						
Rough-legged Hawk											1	
Golden Eagle		2			2							
Merlin					1							
Rock Pigeon	3	149			50		2	12		4	9	6
Great Horned Owl				1	3					1	2	4
Snowy Owl					8	2		1				2
Northern Hawk Owl				1	1							
Great Gray Owl				(7)								
Short-eared Owl												
Downy Woodpecker		3	(1)	7	16	26	4		4	3	2	
Hairy Woodpecker	2	1	(1)	8	14	29	3	1	11	4		
Northern Flicker												
Pileated Woodpecker				1	1	2			2			
Northern Shrike				1					1	(1)	1	
Gray Jay											9	
Blue Jay			1	30	23	110	5	1	30	5	9	
Black-billed Magpie		69	8	12	97	24	20	27	52	14	57	12
Common Raven	1	4		245	76	31	36	1	8	14	39	(1)
Horned Lark		1						26				
Black-capped Chickadee		20	5	288	133	198	10	2	52	13	33	1
Boreal Chickadee						4					4	
Red-breasted Nuthatch			1	12	24	11			11			
White-breasted Nuthatch				5	16	39			6	1		
Golden-crowned Kinglet									2			
European Starling					10							
Bohemian Waxwing		49			100				12			8
Cedar Waxwing			(20)	8	146	50						
Dark-eyed Junco				24	12	24				1		
Snow Bunting		381	4	50	103		41	450			25	200
Pine Grosbeak		2		88		392	50		36	36	33	
House Finch					61							
Common Redpoll		60		157	91	125	80	6	28	93	141	
Hoary Redpoll										5	2	
Pine Siskin			3		17	37						
Evening Grosbeak				377		176	2			9	10	
House Sparrow	253	215	3		452	100	2	78	198	28	112	50
Total Birds Count Day	259	992	25	1328	4919	1391	255	616	454	236	501	311
Total Birds Count Period	259	992	47	1336	4919	1391	255	616	454	237	501	313
Total Species Count Day	4	15	7	23	42	21	12	12	16	16	20	10
Total Species Count Period	4	15	10	25	42	21	12	12	16	17	20	12

Table 3-5 Species found in 9 or more localities () = seen during count period

Aves	Kinistino 2 Jan 2005	Kinloch 3 Jan 2005	Kutawagan Lake 25 Dec 2004	Kyle 3 Jan 2005	LaRonge North 30 Dec 2004	Last Mountain Lake 30 Dec 2004	Leader North 29 Dec 2004	Little Manitou Lake 29 Dec 2004	Love-Torch River 27 Dec 2004	Luseland 5 Jan 2005	MacDowall 1 Jan 2005	MacNutt 28 Dec 2004
Canada Goose												
Mallard												
Common Goldeneye												
Gray Partridge			22	224		36	15	8	30	26	(15)	21
Ring-necked Pheasant							35					
Ruffed Grouse		1							1		(2)	
Sharp-tailed Grouse		1	16	35		56	20	5	20	(2)	(2)	1
Bald Eagle				(1)		1		1				(1)
Northern Goshawk		2		2					(1)		1	1
Rough-legged Hawk				2								
Golden Eagle						1	4					
Merlin												
Rock Pigeon		4	4	257		1	30	1	8	5	6	
Great Horned Owl		(1)	1	28		(1)	2			1		1
Snowy Owl		(1)	1	6				(2)		4		
Northern Hawk Owl												
Great Gray Owl	1								3			
Short-eared Owl			1	39			1					
Downy Woodpecker	1	5	1	1	3		2	4	6	3	2	1
Hairy Woodpecker		7			3	(1)	1	1	5	1	2	4
Northern Flicker				1								
Pileated Woodpecker	2	(1)							(1)		(2)	(1)
Northern Shrike				(1)				1				
Gray Jay	2	7			5				10			
Blue Jay	5	22		3			2	7	11	3		8
Black-billed Magpie	9	10	43	93		14	12	18	75	128	6	39
Common Raven	2	15	2		19			7	195	3	9	41
Horned Lark			2	15		7		67	(1)	72		
Black-capped Chickadee	7	52		2	23	2	4	17	64	24	15	24
Boreal Chickadee		2			2				2			
Red-breasted Nuthatch								1	(2)	3		2
White-breasted Nuthatch		4							2		1	
Golden-crowned Kinglet												
European Starling			7			4						
Bohemian Waxwing				2		(1)	200	43	(1)	5		
Cedar Waxwing												48
Dark-eyed Junco									1		1	
Snow Bunting		33	1706	172		340		135	525	422	600	32
Pine Grosbeak	7	75			52			15	49		6	48
House Finch				5						2		
Common Redpoll	23	86	30	102	12	6		6	114	3	25	14
Hoary Redpoll		3							2			
Pine Siskin									8			
Evening Grosbeak	8	20					12		113		(6)	
House Sparrow		18	292	1239		109	20	31	42	483		9
Total Birds Count Day	67	368	2128	2229	120	577	368	369	1286	1188	674	294
Total Birds Count Period	67	371	2128	2232	120	581	368	371	1292	1190	701	296
Total Species Count Day	11	20	14	20	9	12	17	19	22	17	12	16
Total Species Count Period	11	23	14	22	9	16	17	20	27	18	17	18

Table 3-6 Species found in 9 or more localities () = seen during count period

Aves	Matador 29 Dec 2004	Mayview 21 Dec 2004	Meadow Lake 26 Dec 2004	Moose Jaw 27 Dec 2004	Moose Mountain 22 Dec 2004	Morse 23 Dec 2004	Nipawin 28 Dec 2004	Nisbet Forest NW 31 Dec 2004	Nisbet Forest West 1 Jan 2005	Pike Lake 2 Jan 2005	Preeceville 1 Jan 2005
Canada Goose											
Mallard											
Common Goldeneye											
Gray Partridge			12	25		60	12		(8)	14	
Ring-necked Pheasant				1							
Ruffed Grouse		3	2				3	(4)	1		
Sharp-tailed Grouse	(5)					54	7		1	114	
Bald Eagle			(1)								
Northern Goshawk							1		1		
Rough-legged Hawk	1					(1)					
Golden Eagle	1										
Merlin											
Rock Pigeon				268	34	32		(12)		84	
Great Horned Owl				4		7	1			3	
Snowy Owl				4		1			1		
Northern Hawk Owl			(1)				1		4		
Great Gray Owl							1	(1)	1		
Short-eared Owl								(1)			
Downy Woodpecker			5	6	2		6	2	6	28	6
Hairy Woodpecker			3	3	9		7	2	8	27	6
Northern Flicker										2	
Pileated Woodpecker		1					(1)			1	3
Northern Shrike										3	
Gray Jay		2	5				3	1	2		
Blue Jay		4	4	1	5		12	7	19	37	6
Black-billed Magpie	3		2	32	16	16	34	(2)	15	284	8
Common Raven		2	21		8		78	4	13	54	1
Horned Lark				3		89				18	
Black-capped Chickadee		6	35	25	31		41	24	43	416	50
Boreal Chickadee		1						(1)			
Red-breasted Nuthatch			3	21	1		8	2		4	1
White-breasted Nuthatch			3	2			4	3	4	11	2
Golden-crowned Kinglet					3						
European Starling				10						13	
Bohemian Waxwing	6					(50)	70	45	19	65	
Cedar Waxwing											
Dark-eyed Junco				12							
Snow Bunting	(200)		1000	70		130		(55)	875	1350	
Pine Grosbeak		6	29	1	8		106	4	46	176	47
House Finch				63		6				1	
Common Redpoll		2	68			50	43	14	600	506	75
Hoary Redpoll									24	1	
Pine Siskin				13		2	30	4		2	
Evening Grosbeak		4	8				125	(6)	87	1	12
House Sparrow				272	156	745	98	(13)		492	
Total Birds Count Day	12	31	1201	855	273	1193	691	112	1770	3713	217
Total Birds Count Period	217	32	1203	855	273	1244	692	208	1778	3713	217
Total Species Count Day	5	10	16	22	11	13	22	12	20	30	12
Total Species Count Period	7	11	18	22	11	15	23	22	21	30	12

Table 3-7 Species found in 9 or more localities () = seen during count period

Aves	Prince Albert 19 Dec 2004	Prince Albert NP 22 Dec 2004	Qu'Appelle Dam 19 Dec 2004	Raymore 27 Dec 2004	Regina 26 Dec 2004	Rouleau 1 Jan 2005	Round Lake 28 Dec 2004	Saltcoats 28 Dec 2004	Sask. Landing PP 21 Dec 2004	Sask. R. Forks 29 Dec 2004	Saskatoon 26 Dec 2004
Canada Goose	5		1541		4417		310				1303
Mallard	1		1005		31		20		3		30
Common Goldeneye			110				2				101
Gray Partridge			20	6	41		(10)	1	47		61
Ring-necked Pheasant					2				5		
Ruffed Grouse	1							(2)			1
Sharp-tailed Grouse			1	10			12	19	21		8
Bald Eagle			8					(1)	5		
Northern Goshawk											1
Rough-legged Hawk									2		1
Golden Eagle							2		2		
Merlin	2			1	5						3
Rock Pigeon	330		101	13	912	(10)	117	82	209		1250
Great Horned Owl			1	1	5		1	(1)	8		4
Snowy Owl			2		5				2		1
Northern Hawk Owl											
Great Gray Owl	2										
Short-eared Owl					4						
Downy Woodpecker	7		1	2	7		3	2	1	1	48
Hairy Woodpecker	8	2	2		3		5	6	1	3	26
Northern Flicker			2		5						12
Pileated Woodpecker	2	2		(1)			(1)				1
Northern Shrike				1			3	1			3
Gray Jay		1									
Blue Jay	13		3		2	2	14	4			44
Black-billed Magpie	87	3	57	18	35		25	25	96	12	426
Common Raven	115	2	115	4	30		60	53		4	16
Horned Lark				15	6		(1)		9		
Black-capped Chickadee	101	4	13	6	24		67	32	26	20	553
Boreal Chickadee	5										1
Red-breasted Nuthatch					29		1	(1)	3		58
White-breasted Nuthatch	4			1	5		13	1			5
Golden-crowned Kinglet					7						7
European Starling					5	27		23			5
Bohemian Waxwing	832		329	36	1		221	(56)	100	6	3663
Cedar Waxwing					42	(15)					46
Dark-eyed Junco	4				21		1	1			3
Snow Bunting			122	250	57	6		300	1001	1	90
Pine Grosbeak	64		18	33			4		36	13	43
House Finch				2	112			(2)			426
Common Redpoll	805	9	15	6		17	348	400	99	300	482
Hoary Redpoll							1		1		2
Pine Siskin	1				2						88
Evening Grosbeak	2									3	
House Sparrow	298		484	267	1180	20	39	136	795	15	3410
Total Birds Count Day	2693	25	3997	675	7059	85	1273	1087	2487	380	12277
Total Birds Count Period	2693	25	3997	678	7059	110	1286	1151	2487	380	12281
Total Species Count Day	23	8	28	20	39	6	24	17	27	13	46
Total Species Count Period	23	8	28	23	39	8	28	24	27	13	50

Table 3-8 Species found in 9 or more localities () = seen during count period

Aves	Shamrock 18 Dec 2004	Skull Creek 26 Dec 2004	Snowden 31 Dec 2004	Somme 30 Dec 2004	Spinney Hill 14 Dec 2004	Spruce Home, SW 19 Dec 2004	Squaw Rapids 5 Jan 2005	Stenen 1 Jan 2005	Swift Current 27 Dec 2004	Togo 3 Jan 2005	Torch River Valley 29 Dec 2004
Canada Goose									(40)		
Mallard							1		10		
Common Goldeneye							191				
Gray Partridge	41		17	(5)	15		6		43		
Ring-necked Pheasant		1							28		
Ruffed Grouse				1	1	(3)	3			2	4
Sharp-tailed Grouse		60		20					18		5
Bald Eagle				(2)			3		1		1
Northern Goshawk					1						2
Rough-legged Hawk					1				1		
Golden Eagle									4		
Merlin									4		
Rock Pigeon	14	7		17	6				466		
Great Horned Owl	4		1	(1)					6	1	1
Snowy Owl	1			(1)	1				5		
Northern Hawk Owl			1				3				
Great Gray Owl			2	(1)			3				1
Short-eared Owl											
Downy Woodpecker		3	5	7	2	2	1	2	7	6	6
Hairy Woodpecker		1	7	6	1	2		2	(1)	11	11
Northern Flicker		1			1				6		
Pileated Woodpecker				1	1		1	2			6
Northern Shrike			(1)		1		1				
Gray Jay			2	5			2	4		2	10
Blue Jay			43	11	7	1	6	4	6	25	29
Black-billed Magpie	15	25	77	30	39	(6)	12	2	42	6	12
Common Raven			360	98	11	(4)	39	6		16	22
Horned Lark	67	60							38		1
Black-capped Chickadee		25	106	53	15	14	18	10	3	47	85
Boreal Chickadee			6			2					2
Red-breasted Nuthatch		1					1		75		13
White-breasted Nuthatch			2	7					4	6	20
Golden-crowned Kinglet									9		
European Starling				6							
Bohemian Waxwing					2				6		
Cedar Waxwing		300							11		
Dark-eyed Junco			1						32		
Snow Bunting	500	1000	75	16	185		775		2675	68	95
Pine Grosbeak			80	54	9	16	31	6	13	45	90
House Finch					1				397		
Common Redpoll	12		339	267	35	10	240	35	62	193	98
Hoary Redpoll							2				12
Pine Siskin						4			73		
Evening Grosbeak			119	85		12	16	6		8	263
House Sparrow	230	30	22	118	89				3406	16	58
Total Birds Count Day	945	1540	1265	802	429	65	1369	79	7464	453	847
Total Birds Count Period	945	1540	1266	812	429	79	1369	79	7508	453	847
Total Species Count Day	11	15	19	18	24	10	26	11	34	16	24
Total Species Count Period	11	15	20	23	24	14	26	11	37	16	24

Table 3-9 Species found in 9 or more localities () = seen during count period

Aves	Turtle Lake 21 Dec 2004	Turtleford 29 Dec 2004	Weyburn 21 Dec 2004	White Bear 4 Jan 2005	Whitewood 2 Jan 2005	Yorkton 18 Dec 2004	Totals Count Day	Totals Count Period	# of Counts Seen Count Day	# of Counts Seen Count Period
Canada Goose		6					24203	24243	15	16
Mallard						185	33028	33028	20	20
Common Goldeneye							526	526	10	10
Gray Partridge	15	30	12	52	(1)	24	1516	1556	53	59
Ring-necked Pheasant			3				124	124	15	15
Ruffed Grouse	6	1			1		61	73	28	33
Sharp-tailed Grouse	15	5	6	6	7		1056	1065	52	55
Bald Eagle	2		1			(1)	79	88	22	30
Northern Goshawk		2					25	27	15	17
Rough-legged Hawk							19	20	13	14
Golden Eagle				2	1		36	39	20	22
Merlin			2		1		21	22	10	11
Rock Pigeon		65	110	80	13	405	6247	6269	63	65
Great Horned Owl	1	1	1	1	(1)		139	146	45	52
Snowy Owl		(2)	11		1		77	84	30	35
Northern Hawk Owl	1	1					16	18	11	13
Great Gray Owl	2						21	30	12	15
Short-eared Owl				1			53	54	9	10
Downy Woodpecker	6	5	1		12	4	389	390	77	78
Hairy Woodpecker	7	5			8	2	374	378	71	75
Northern Flicker							36	36	11	11
Pileated Woodpecker	2	1					38	46	23	30
Northern Shrike		1			(1)	1	33	41	23	30
Gray Jay	2						84	85	22	23
Blue Jay	10	4	3		1	5	733	736	67	70
Black-billed Magpie	2	17	7	63	61	62	3861	3869	90	92
Common Raven	5	40			12	47	2614	2619	75	77
Horned Lark			3	10	4		1449	1466	37	40
Black-capped Chickadee	15	38	2		161	55	4295	4295	87	87
Boreal Chickadee	3						58	59	18	19
Red-breasted Nuthatch	2		3		1	4	357	362	42	46
White-breasted Nuthatch	3	1	4		15	4	247	248	46	47
Golden-crowned Kinglet						(2)	55	57	12	13
European Starling			1	30	1		223	223	24	24
Bohemian Waxwing		30			40	12	7615	7723	45	49
Cedar Waxwing							681	716	10	12
Dark-eyed Junco			6		(1)	8	189	190	23	24
Snow Bunting	75	650	125		1369	352	25216	25506	67	71
Pine Grosbeak	15	35				17	2229	2234	59	60
House Finch			48		14	26	1293	1296	23	25
Common Redpoll	20	603		50	108	212	9541	9541	84	84
Hoary Redpoll	10	2					85	85	16	16
Pine Siskin			2				324	326	20	21
Evening Grosbeak	7					4	1701	1713	32	34
House Sparrow		100	238	135	208	375	23098	23112	78	80
Total Birds Count Day	229	1644	593	430	2039	1835	155042			
Total Birds Count Period	229	1646	593	430	2043	1838		155790		
Total Species Count Day	24	24	24	11	21	25	105			
Total Species Count Period	24	25	24	11	25	27		108		

Table 4-1 Species found in fewer than 9 localities

Species	Locality and Number (* = Count Period)
Cackling Goose	Gardiner Dam (1)
American Wigeon	Coronach (1)
Blue-winged Teal	Coronach (1)
Northern Pintail	Coronach (4), Yorkton (2)
Green-winged Teal	Yorkton (2)
Canvasback	Round Lake (2), Saskatoon (1*)
Redhead	Crooked Lake (1), Fort Qu'Appelle (2), Qu'Appelle Dam (8), Squaw Rapids (1)
Ring-necked Duck	Crooked Lake (1), Gardiner Dam(1)
Lesser Scaup	Crooked Lake (2), Estevan (3*), Gardiner Dam (24), Round Lake (2), Saskatoon (1)
Bufflehead	Coronach (1), Squaw Rapids (1)
Common Merganser	Estevan (1*), Gardiner Dam (97), Indian Head (1), Qu'Appelle Dam (31), Saskatoon (1*), Spinney Hill (1), Squaw Rapids (8)
Spruce Grouse	LaRonge North (1), Meadow Lake (1), Turtle Lake (3)
Wild Turkey	Broadview (9), Fort Walsh (1), Leader North (7)
Double-crested Cormorant	Gardiner Dam (1)
Turkey Vulture	Indian Head (3)
Sharp-shinned Hawk	Archerwill (1), Craven (1*)
Cooper's Hawk	Clark's Crossing (1), Saskatoon (1)
Red-tailed Hawk	Cypress Hills PP (1), Kamsack (2)
American Kestrel	Indian Head (1)
Peregrine Falcon	Gardiner Dam (1), Sask. Landing PP (1)
Prairie Falcon	Cabri (1), Estuary North (1), Govenlock (1), Kindersley North (1*), Kyle (1*), Qu'Appelle Dam (1), Regina (1)
American Coot	Estevan (11*)
Sandhill Crane	Cabri (2*)
Wilson's Snipe	Clark's Crossing (1), Fort Walsh (1), Qu'Appelle Dam (1), Sask. Landing PP (1)
Herring Gull	Gardiner Dam (2), Qu'Appelle Dam(1)
Glaucous Gull	Gardiner Dam (4), Qu'Appelle Dam(1)
Eurasian Collared-Dove	Moose Jaw (18), Morse (1), Swift Current (3*), Weyburn (2)
Mourning Dove	Weyburn (1)
Barred Owl	Endeavour (1), Mayview(1*)
Long-eared Owl	Gardiner Dam (1), Sask. Landing PP (1)
Boreal Owl	Round Lake (1*)
Northern Saw-whet Owl	Crooked Lake (1), Eastend (1*), Endeavour (1), Indian Head (1), Saskatoon (1*), Togo(1)
Am. Three-toed Woodpecker	Duck Lake (2), Emma Lake (1*), Regina (1), Sask. R. Forks (1), Spinney Hill (1), Squaw Rapids (1)
Black-backed Woodpecker	Emma Lake (1*), Kinloch (1), Nisbet Forest NW (1*), Prince Albert NP (2), Spruce Home SW (1*), Squaw Rapids (3)
Loggerhead Shrike	Fort Walsh (1)
American Crow	Leader North (1), Regina (1), Saskatoon (3), Turtleford (1), Weyburn (1), Yorkton (19)
Brown Creeper	Bangor (6), Cypress Hills PP (11), Estevan (1), Fort Walsh (1), Regina (3), Sask. Landing PP (4), Saskatoon (2), Swift Current (7)
American Dipper	Eastend (1)
Townsend's Solitaire	Cypress Hills PP (1), Eastend (1), Raymore (1), Saskatoon (2), Swift Current (1)
American Robin	Clark's Crossing (1), Fort Qu'Appelle (1*), Indian Head (2), Pike Lake (3), Saltcoats (1)

Table 4-2 Species found in fewer than 9 localities

Species	Locality and Number (* = Count Period)
Varied Thrush	Little Manitou Lake (1), Moose Jaw (1), Pike Lake (1), Regina (1), Swift Current (1)
Spotted Towhee	Cypress Hills PP (1)
American Tree Sparrow	Bromhead (2), Cypress Hills PP (1), Eastend (5), Fort Walsh (36), Last Mountain Lake (1*), Qu'Appelle Dam (4), Sask. Landing PP (8), Sask. R. Forks (1)
Chipping Sparrow	Armit (2), Indian Head (1)
Vesper Sparrow	Yorkton (2)
Fox Sparrow	Hudson Bay West (3)
Song Sparrow	Fort Walsh (1)
White-throated Sparrow	Armit (10), Kindersley North (1), Saskatoon (2), Swift Current (3)
Harris's Sparrow	Fort Walsh (1), Raymore (1*), Skull Creek (25), Yorkton (6)
White-crowned Sparrow	Fort Walsh (2), Pike Lake (1), Regina (1), Saskatoon (1*)
McCown's Longspur	Coronach (10)
Lapland Longspur	Bromhead (27), Coronach (50), Govenlock (2), Grasslands NP (45), Shamrock (60), Spinney Hill (3)
Red-winged Blackbird	Fort Walsh(4), Regina (7)
Western Meadowlark	Skull Creek (1)
Rusty Blackbird	Estevan (2), Fort Qu'Appelle (6*), Raymore (1*), Swift Current (1)
Brewer's Blackbird	Hudson Bay West (1)
Common Grackle	Eastend (1), Hudson Bay West (1), Regina (2), Saskatoon (1)
Gray-crowned Rosy-Finch	Eastend (1), Indian Head (1), Pike Lake (1), Spruce Home SW (2)
Purple Finch	Armit (4), Codette Lake (42), Fort Qu'Appelle (20), Fort Walsh (1), Indian Head (8), Prince Albert (1), Rouleau (13)
Red Crossbill	Cypress Hills PP (8), Fort Qu'Appelle (1*), Indian Head (2), Regina (10), Saskatoon (10)
White-winged Crossbill	Biggar (2*), Broadview (4), Cypress Hills PP (2), Eastend (30), Indian Head (3), Kilwinning (5), Raymore (2), Regina (35), Saskatoon (30)
American Goldfinch	Craven (10), Fort Qu'Appelle (1*), Indian Head (2), Kenosee Lake (1), Regina (2), Saskatoon (1)

Table 5 Birds not identified to species

Category	Locality and Number (* = Count Period)
Swan sp.	Gardiner Dam (2)
Duck sp. (Aythya)	Saskatoon (1)
Eagle sp.	Kyle (1)
Buteo sp.	Saltcoats(1*), Saskatoon (1), Shamrock(1)
Large Falcon sp.	Coronach (1), Matador (1)
Woodpecker sp.	Candle Lake (1)
Sparrow sp.	Birch Hills (1), Grasslands NP (4), Prince Albert (3)
Crossbill sp.	Duck Lake (2)

Table 6. New (in bold and italics) and tying high counts for individual species 2004. Count period results are in brackets.

LOCATION	2004 SPECIES COUNT		PREVIOUS LOCATION, YEAR HIGH
<i>Gardiner Dam</i>	1	<i>Cackling Goose</i>	New
<i>Gardiner Dam</i>	24	<i>Lesser Scaup</i>	15 Regina 1971
Gardiner Dam	1	Double-crested Cormorant	1 On previous counts north to Squaw Rapids
Saskatchewan Landing P. P.	1	Peregrine Falcon	1 On previous counts north to Squaw Rapids-Carrot River
<i>Cabri</i>	(2)	<i>Sandhill Crane</i>	1 Yorkton 2003
Gardiner Dam	4	Glaucous Gull	4 Gardiner Dam 1987, 1988, 1990
<i>Moose Jaw</i>	18	<i>Eurasian Collared- Dove</i>	8 Moose Jaw 2001
<i>Kyle</i>	28	<i>Great Horned Owl</i>	21 Saskatoon 1987
Nisbet Forest West	4	Northern Hawk Owl	4 Armit 1992, Crooked River 1992
<i>Kyle</i>	37	<i>Short-eared Owl</i>	21 Saskatoon 1987
Round Lake	(1)	Boreal Owl	1 On previous counts south to Indian Head
6 counts (see Table 4.)	1	Northern Saw-whet Owl	1 On previous counts north to Maidstone Bridge
Fort Walsh	1	Loggerhead Shrike	1 Fort Walsh 1981, Regina 1982, Fife Lake (1994)
<i>Snowden</i>	360	<i>Common Raven</i>	279 Nipawin 1993
<i>Cypress Hills P. P.</i>	11	<i>Brown Creeper</i>	10 Fort Walsh 2001
<i>Eastend</i>	1	<i>American Dipper</i>	New
Cypress Hills P.P.	1	Spotted Towhee	1 On previous counts north to Turtle Lake and Saskatoon
<i>Hudson Bay</i>	3	<i>Fox Sparrow</i>	1 On previous counts north to Turtle Lake and Saskatoon
Yorkton	2	Vesper Sparrow	2 Swift Current 1993
<i>Armit</i>	10	<i>White-throated Sparrow</i>	7 Swift Current 1996
<i>Skull Creek</i>	25	<i>Harris's Sparrow</i>	15 Skull Creek 1992
Fort Qu'Appelle	2	White-crowned Sparrow	2 Craven 1999, Swift Current 2003
<i>Coronach</i>	10	<i>McCown's Longspur</i>	1 Govenlock 1982

Table 7. Population changes in numbers of selected species in 2004* compared to 2003 and the average for 5 years (1999-2003), based on the number of birds per party hour. A minus sign indicates a decrease from previous years.

Species	% change from 2003	% change from 1999-2003		% change from 2003	% change from 1999-2003
Canada Goose	222	32	Black-billed Magpie	-18	-24
Mallard	895	50	American Crow	-27	13
Common Goldeneye	-27	-23	Common Raven	-9	-1
Common Merganser	-18	-24	Horned Lark	1186	-13
Gray Partridge	-55	3	Black-capped Chickadee	-6	-3
Ring-necked Pheasant	-68	-33	Boreal Chickadee	-60	-65
Ruffed Grouse	-61	-46	Red-breasted Nuthatch	-43	-34
Sharp-tailed Grouse	-70	-32	White-breasted Nuthatch	2	-19
Bald Eagle	-16	-7	Brown Creeper	60	146
Northern Goshawk	14	50	Golden-crowned Kinglet	42	-13
Rough-legged Hawk	-17	2	American Robin	-88	-95
Golden Eagle	-7	10	European Starling	-49	-50
Merlin	34	69	Bohemian Waxwing	33	3
Prairie Falcon	15	-39	Cedar Waxwing	145	86
Rock Pigeon	-19	-17	American Tree Sparrow	173	-11
Great Horned Owl	35	44	Dark-eyed Junco	-61	-31
Snowy Owl	72	10	Lapland Longspur	497	-84
Great Gray Owl	152	-19	Snow Bunting	168	35
Short-eared Owl	2439	310	Pine Grosbeak	-13	38
Downy Woodpecker	-15	-2	Purple Finch	42	-9
Hairy Woodpecker	-13	2	House Finch	3	60
Black-backed Woodpecker	-70	-45	White-winged Crossbill	-87	-61
Northern Flicker	-30	-24	Common Redpoll	-35	-11
Pileated Woodpecker	-44	-5	Hoary Redpoll	-49	-28
Northern Shrike	352	142	Pine Siskin	11	4
Gray Jay	-60	-52	Evening Grosbeak	-7	-11
Blue Jay	36	16	House Sparrow	-25	1

**As tremendous changes can occur in small sample sizes only those species recorded on an annual average of six or more counts are included.*

PHENOLOGY OF THREE RAPTOR SPECIES IN CENTRAL ALBERTA BASED ON NEST BANDING RECORDS

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The Great Horned Owl, Red-tailed Hawk and Swainson's Hawk are sympatric in the central Alberta study area¹⁹ and frequently use the same nest structures. Breeding Red-tailed Hawks prefer the Aspen Parkland and Mixedwood zones with pasturelands, but may occasionally nest in wooded areas on the prairies,^{1,11,22} while Swainson's Hawks are found in more developed agricultural areas dominated by cropland. Great Horned Owls, found in both habitats,²² nest early and take over stick nests built by hawks in Balsam Poplar (*Populus balsamifera*) and Trembling Aspen (*Populus tremuloides*) and, less frequently, in maple (*Acer sp.*), willow (*Salix sp.*), and White Spruce (*Picea glauca*).

Volunteers have been banding birds of prey since the 1960s in Alberta. In 1988, a volunteer raptor nest card program was initiated by Alberta Sustainable Resource Development (ASRD) to enable banders and researchers to collect information on nest locations of birds of prey. The program was not maintained after the mid-90s, however some banders continued to fill out nest cards. These nest cards were stored at ASRD and Beaverhill Bird Observatory until funding became available to analyze these long-term data sets.

The objectives of the current study, which was conducted by Beaverhill Bird Observatory in 2003, were to: 1) enter into a computerized database all backlogged data that have been collected since the mid-1990s, 2) establish a full time volunteer-based raptor nest card program, so that members of the public can report raptor nests

and participate in banding, and 3) analyze data on the phenology of nesting of various raptor species. The goal was also to make the raptor nest card compatible with the Prairie Nest Record card habitat codes (developed by the Canadian Wildlife Service, the Federation of Alberta Naturalists, and Bird Studies Canada in 2003). This paper focuses on the timing of nesting of the Great Horned Owl, Red-tailed Hawk, and Swainson's Hawk in central Alberta, based on banding data collected between 1991 and 2003, as records before 1991 did not contain information on age of nestlings banded.

Methods

The study area, defined by the data set of nests included in this paper, is centred on Edmonton, Alberta. The area (latitudes 52.5° to 54.1°, longitudes 110.5° to 116.2°) encompasses about 60 000 km². The habitat for most nests was predominantly Aspen Parkland, but some nests were located along the southern edge of the boreal, and northern edge of the prairie, ecoregions. Volunteer banders located nests by driving roads in the winter and early spring searching for stick nests. Nests were also found by looking for pairs of birds on territory in the spring. Landowners would also contact banders if they found a nest on their land. Nest cards were filled out by banders for occupied nests, and contain information on the species using the nest, nest type (stick, cavity, man-made), nest height, nest habitat, and banding data including an estimate of the age (in days) of the young at banding.^{8,12,16,18} All data were entered into Microsoft Excel for analysis.

Table 1. Estimated days for incubation and fledging of Great Horned Owl, Red-tailed Hawk, and Swainson's Hawk based on literature, and used for this study.

Species	Incubation	Fledging	Incubation and Fledging Days Used this Study
Great Horned Owl	26-35 days ³ 30-37 days ¹⁰	45 days ²	Incubation–35 days Fledging–45 days
Red-tailed Hawk	30-35 days ³ 28 to 32 days ^{16,23} 34 to 35 ¹⁸	45-46 days ³ 43-48 days ¹³ 42 days ⁵	Incubation–35 days Fledging–46 days
Swainson's Hawk	28, 34 to 35 days ⁷ 28 days ^{8,20}	42-45 days ³ 38-46 days ⁷ 42 days ²⁰	Incubation–35 days Fledging–45 days

The estimated time of hatching was calculated by using the date of banding and subtracting the age of the oldest nestling estimated at the time of banding. For example, for young Great Horned Owls estimated to be 30-33 days 15 May, the hatch date would be 15 May minus 33 days or 12 April. The laying date was estimated by using the estimated hatch date and subtracting the number of days required for incubation, and the fledging date was calculated by using the hatch date and adding the average number of days required for fledging based on literature (Table 1). The times required for incubation and fledging were taken to be the highest number of days reported in the literature, since there is little information specific to Alberta.

Results and Discussion

Great Horned Owl

There were 358 Great Horned Owl nest records collected from 1991 to 2003. In our

study, the earliest estimated date for egg laying was 28 January and the latest was 11 May, with a mean laying date of 7 March (Figure 1). The mean estimated hatching date was 11 April (range of 4 March to 15 June) and the mean estimated fledging date was 26 May (range of 18 April to 30 July).

Great Horned Owls are very early nesters, even in northern latitudes, with egg laying and incubation underway well before the snow disappears. The earliest known egg laying record is December 15 from Montana (D. Holt, pers. comm.). One of the latest records was 19 March from the northern United States.⁵ In Saskatchewan, the latest eggs laid were on 12 May,¹² similar to our study.

Red-tailed Hawk

A total of 295 Red-tailed Hawk nest records were collected from 1991 to 2003. In our study, the earliest estimated egg laying

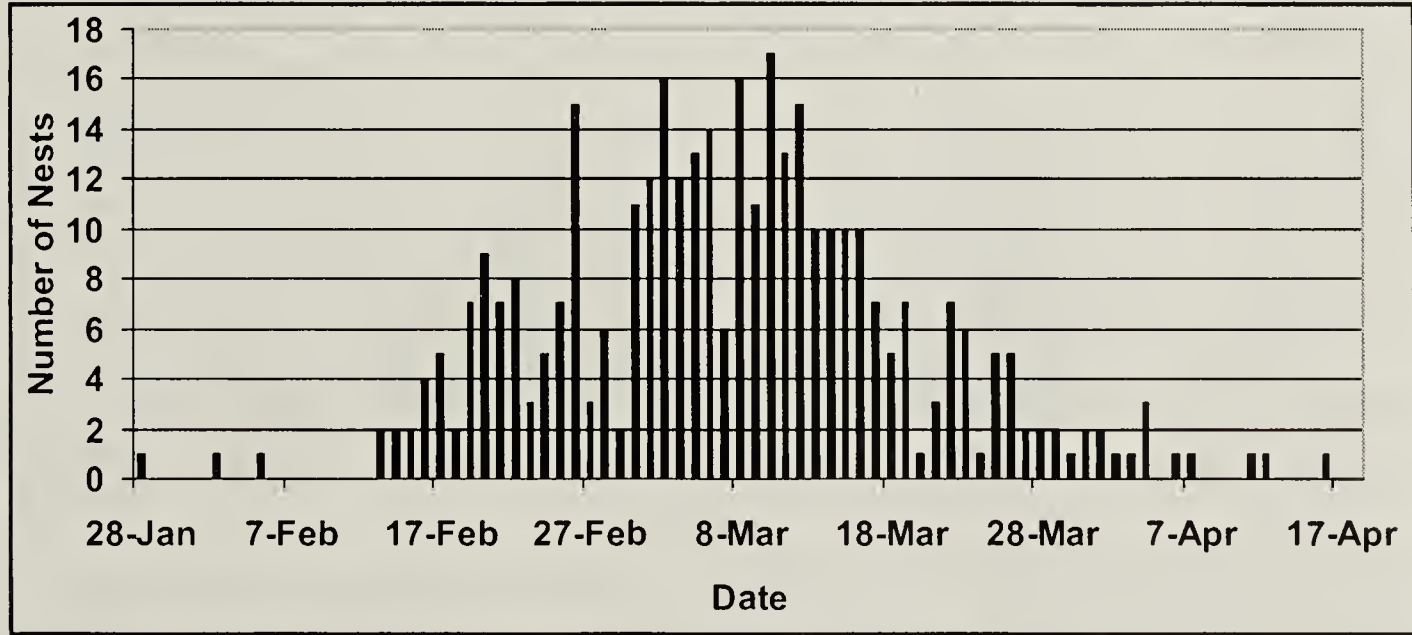


Figure 1. Estimated laying dates of the Great Horned Owl in central Alberta.

date was 6 April and the latest was 27 May (mean 24 April) (Figure 2). The mean estimated hatching date was 29 May (range of 11 May to 1 July) and the mean estimated fledging date was 14 July (range of 26 June to 16 August).

(1966) observed Red-tailed Hawks between 4-17 July that were about 4-5 weeks old.

Swainson's Hawk

There were 231 Swainson's Hawk nest records collected from 1991 to 2003. In our

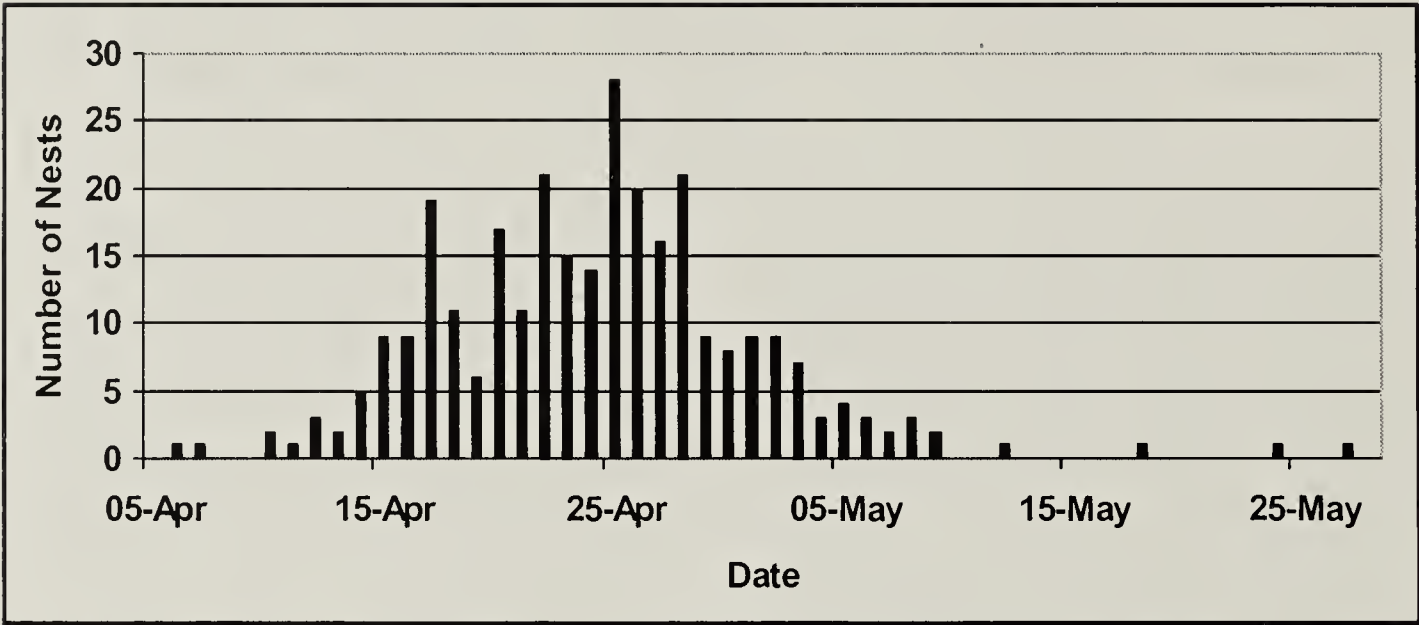


Figure 2. Estimated laying dates of the Red-tailed Hawk in central Alberta.

The estimated laying dates for Red-tailed Hawk have ranged from 5 April to 6 May in Montana ¹³ and incubating females have been reported from late April through the end of May in Saskatchewan.⁹ In Alberta, another study found eggs hatching between 1 June and 16 June.¹⁴ Nests found in our study show a similar range of dates. On 5 June, four downy young Red-tails were observed in a nest along the Rosebud River in southern Alberta,¹⁷ and Meslow and Keith

study, the earliest estimated egg laying date was 6 May and the latest was 15 June (mean 23 May). The mean estimated hatching date was 27 June (range of 10 June to 20 July). The mean estimated fledging date was 11 August (range of 26 July to 3 September) (Figure 3).

Schmutz *et al.* reported that the average hatching date for Swainson's Hawks in southeastern Alberta was near the end of

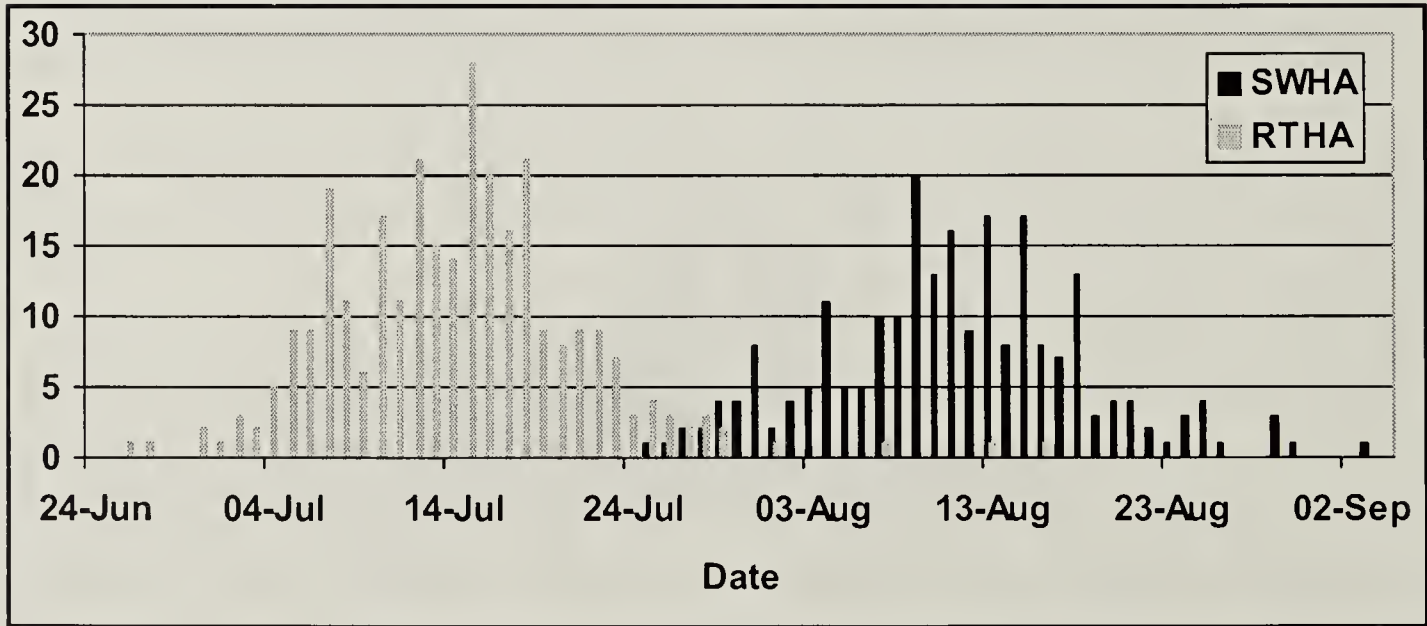


Figure 3. Estimated fledge dates of Red-tailed Hawk and Swainson's Hawk nestlings in central Alberta.

June, and in Wyoming eggs hatched between 16 May and 3 July.⁵ The mean hatch date of 23 May in this study is quite similar. Schmutz *et al.* found the fledgling period in southeastern Alberta to be mid-June to late August. The mean fledging date found in my study is similar, and also shows the wide variation in fledging dates.

On average, fledging of young Swainson's Hawks occurred 28 days later than Red-tailed Hawks and 76 days later than Great Horned Owls. The range of dates for the breeding season from laying to fledging was highest for the Great Horned Owl (184 days), followed by the Red-tailed Hawk (132 days), followed by the Swainson's Hawk (120 days) over the 13 years.

Conclusions

Protecting nesting raptors is one of the best ways to ensure populations remain stable. Nests of Great Horned Owls need to be protected from excessive disturbance from the beginning of March through to the end of May. Red-tailed Hawk nests should be protected from mid-April to the end of July, and Swainson's Hawk nests from early May to the end of August.

Raptors (owls, hawks, eagles, etc.) are excellent indicators of the health of the environment.⁴ Data on primary demographic parameters (productivity and survivorship) are needed to determine the factors responsible for the population declines in birds and to identify conservation and management actions to reverse the declines.^{1,6} Tracking nesting raptors such as the sympatric Great Horned Owl, Red-tailed Hawk, and Swainson's Hawk, allows managers to monitor phenology and productivity, and any changes in these over time. Future analyses of the nest card data collected by volunteers will look at these parameters.

Having volunteers collect the information can reduce the costs of this work. Meeting



Young Red-tailed Hawk with a band on its leg, July 1, 2003 Lisa Priestley

with landowners and bringing them out to see the young hawks and owls, can give landowners a sense of pride in the raptors they have on their land. An increase in public knowledge of raptors and their importance can result when the landowner shares the information they have learned with others.

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SWAINSON'S HAWK LONGEVITY, COLOUR BANDING AND NATAL DISPERSAL

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I reviewed all banding records for North American Swainson's Hawks through the year 2000, and added 21 more recent encounters of Swainson's Hawks banded under my permit through 2003. I was interested in three topics: longevity (how long individuals live), where hawks spent the year after they hatched, and natal dispersal (movements from birth location to first breeding location) of Saskatchewan-born birds. Details of the 12 banded hawks that died from monocrotophos poisoning in Argentina are presented in a separate table and results of a colour banding experiment near Kindersley, SK in 1988-1995 are given special attention.

History of Saskatchewan banding

Saskatchewan is fortunate among all North American jurisdictions in having

available banding data on the great majority of birds prior to computerization of banding records in 1955. All of the pre-1955 recoveries and encounters of Saskatchewan birds have been computerized whereas North American banding data have been computerized retroactively only for game birds. ('Encounter' is the all-inclusive term that includes birds found dead or alive, whereas the term 'recovery' should be restricted to birds found dead.) Between 1924 and 1941, seven Saskatchewan banders banded 76 Swainson's Hawks, with the then-prevailing high rate of recoveries (14 or 18.4%; 13 of the 14 had been shot) (Table 1). Hartley Fredeen of Macrorie, Saskatchewan, was the first North American bander to have a Swainson's Hawk recovered anywhere in South America, in Argentina on 23 December 1941.⁴ From 1955 to 2001, 13 Saskatchewan

Table 1								
Saskatchewan banders of Swainson's Hawks, 1924-2001								
Bander #	Name	Locality	Years	# banded	# recov dead	# encounters alive	Total	percent
14	Carter, RH	Muscow	1924	6	1	0	1	
14	Lloyd, R	Davidson	1931-32	3	2	0	2	
180	Holmes, CF	Dollard	1934-36	15	5	0	5	
362	Hedlin, R	Renown	1938	14	1	0	1	
237	Hammond	Cupar	1939	5	1	0	1	
369	Fredeen, FJH	Macrorie	1940	29	3	0	3	
443	Bird, Dick	Avonlea	1941	4	1	0	1	
Total, 1924-1951				76	14	0	14	18.4%
460	Houston, CS	widely	1946-2001	4046	130	16	146	
755	Anaka, W	Spirit L.	1958	4	1	0	1	
5460	Hamerstrom, F	Flaxcombe	1959	3	0	0	0	
10061	Millar, J	Swift Current	1962-63	5	1	0	1	
10066	Fyfe, R	widely	1974-80	5	0	0	0	
10076	Fox, GA	Regina	1962	1	0	0	0	
10079	Sealy, SG	Scentgrass	1962	1	0	0	0	
10108	Lein, R	widely	1962-65	16	0	0	0	
10168	Maher, WJ	Matador	1968	3	0	0	0	
10214	Whitfield, DWA	widely	1968-70	17	2	0	2	
10242	Scott, RL	widely	1969-81	29	1	0	1	
10299	Nieman, D	Saskatoon	1981	2	0	0	0	
10486	Harris, WC	widely	1986-90	859	44	0	44	
Total, 1955-2001				4991	179	16	195	3.9%

banders banded 4991 individual Swainson’s Hawks with a recovery rate of dead hawks of 3.6% or, with inclusion of live birds, a total encounter rate of 3.9% (Table 1).

Longevity

Two recent Swainson’s Hawk recoveries indicating unusually long survival led me to review all North American band encounters of this species. An earlier analysis of 550 encounters of 541 individual hawks banded in North America through 1992 had revealed that the four oldest birds had died at 13, 14, 15 and 18 years.⁸

The Canadian Wildlife Service banding office provided an electronic record of the 762 encounters from North American banding through the year 2000. The twelve banded Swainson’s Hawks among the 1,690 that died from monocrotophos poisoning in La Pampa province of Argentina in January 1995 and January 1996 are part of this data set.

To increase the accuracy of the data from the hawks I had personally banded, I contacted most of the band finders by telephone or letter. Information from these people led to 32 changes in “how found” (four since the banding office printout mentioned above), and 19 corrections of latitude or longitude or both, in “where found.”

Eight Swainson’s Hawks in the banding office records are now known to have survived more than 17 years, one of which was still alive at last report (Table 2). Inclusion of live birds is at the suggestion of Brownie that sparse recaptures of live birds can be combined with recoveries of dead birds.² The oldest hawk was one banded in Colorado and found dead of monocrotophos poisoning in Argentina at 19 years, 6 months.

The two hawks listed as alive in Table 2 are of special interest. One hawk had been banded by Joe Schmutz near Hanna, Alberta

in 1975, and then trapped and released about 10 km distant in 1982, 1985 and 1986, where it had been resident in the same group of trees every year. In 1994, when 19 years old, it moved less than a kilometer to a new site, but in 1995 it was not seen and was presumed dead (J.K. Schmutz, pers. comm.). The second was a hawk banded at Lostwood Refuge, North Dakota, on July 14, 1983, by R.K. Murphy. On January 1, 2001, it was caught by hand, unable to fly, on an airport runway at Palmira, Colombia, only three degrees north of the equator. It was thought to have been poisoned from feeding in sugar cane fields nearby. It no doubt would have perished had it not been sent to a raptor rehabilitation facility operated by Luz-Stella Castillo. It was released after more than three months, able to fly, on April 16 (R.K. Murphy, pers. comm.).

At least one unreported encounter, not yet entered into the computerized central records, exceeds those within the system. Brian Woodbridge (pers.comm.) has had a 24-year-old hawk return alive to its breeding site in northern California, where it was trapped by Peter H. Bloom in 2004.

Details of all banded Swainson’s Hawks recovered after the massive poisonings in Argentina are presented in Table 3. The 12 poisoned hawks are of special interest because of their high average age, and because five of the twelve originated in Saskatchewan and three in Alberta. Only incomplete details have been published previously.⁵

Mortality of Saskatchewan-banded hawks

There has not been a single undisputed recovery/encounter of a first year Swainson’s Hawk banded in the area covered by the Kindersley 1:50,000 topographic map sheet (51 to 52 degrees latitude north and 108 to 110 degrees longitude west). To study this unexpected absence during the calendar year after hatching, when the hawks were 10 to 16 months old, before and just after

Table 2

Swainson's Hawks 17 years and older, banded as nestlings anywhere in North America

Band #	AGE Yrs, Mos	DATE AND LOCATION ENCOUNTERED					DATE AND LOCATION BANDED						
		Mo/dy	Year	Location	Lat	Long	How Found	Mo/day	Year	State	Lat	Long	Bander
098709858	19, 6	Jan 23	1995	Argentina	-351	633	Poison	Jul 11	1975	CO	370	1024	Andersen
098740999	19, 2	Oct 2	2001	SK	500	1040	Found dead	Jul 24	1982	SK	513	1090	Houston
087709325	19, 0	Aug 5	1994	AB	512	1114	Alive, last seen	Jul 28	1975	AB	513	1114	Schmutz
098742132	18, 11	Jun 14	2002	SK	501	1093	Found dead	Jul 8	1983	SK	501	1092	Houston
098703868	18, 1	Sep 1	1991	Texas	355	1015	Injured	Jul 14	1973	CO	382	1033	Andersen
098730629	18, 0	Aug 16	1996	Colorado	403	1043	Car	Jul 31	1978	CO	403	1042	Orde
072703163	17, 5	Jan 25	1996	Argentina	-352	640	Poison	Jul 29	1978	AB	505	1113	Fyfe
098774203	17, 5	Jan 1	2001	Colombia	32	763	Alive, rehab	Jul 14	1983	ND	483	1022	Murphy

-352 indicates between 35 degrees 20 minutes and 35 degrees 30 minutes South Latitude
370 indicates between 37 degrees 00 minutes and 37 degrees 10 minutes North Latitude
1024 indicates between 102 degrees 40 minutes and 102 degrees 50 minutes West Longitude

Table 3

Swainson's Hawks recovered due to monocrotophos poisoning near Alta Italia, Argentina

Band #	Age Yrs, Mos	Recovery Data		Distance from nest		Banding Data		Location		State/ Prov	Bander	Age
		Date Mo/Dy	Year	Lat	Long	Date Mo/Dy	Year	Lat	Long			
0987-09858	19, 6	Jan 23	1995	-351	0633	Jul 11	1975	370	1024	CO	Andersen	Loc
0987-61386	7, 5	Feb 2	1996	-352	0640	Aug 1	1988	475	1075	MT	Eng	Loc
0987-63107	11, 6	Feb 2	1996	-352	0640	Jul 5	1984	415	1215	CA	Bloom	Loc
1807-42732	0, 6	Jan 23	1995	-351	0633	Jul 4	1994	415	1215	CA	Woodbridge	ASY
0727-03163	17, 4	Jan 25	1996	-352	0640	Jul 29	1978	505	1113	AB	Schmutz	Loc
0987-45045	9, 6	Jan 29	1996	-352	0640	Jul 7	1986	531	1133	AB	Pletz	Loc
1807-08648	1, 6	Jan 31	1996	-352	0640	Jul 18	1994	505	1104	AB	Jones	Loc
0987-88629	5, 6	Jan 25	1996	-352	0640	Jul 23	1990	493	1051	SK	Harris	Loc
0987-88579	4, 5	Jan 23	1995	-352	0633	Aug 1	1990	501	1062	SK	Harris	Loc
0987-46660	9, 6	Jan 30	1996	-352	0640	Jul 6	1986	513	1092	SK	Houston	Loc
1807-08126	5, 6	Feb 2	1996	-352	0640	Jul 23	1990	511	1082	SK	Houston	Loc
1807-12745	0, 6	Jan 30	1996	-352	0640	Jul 30	1995	505	1081	SK	Houston	Loc

* Loc - flightless young (locals), hatched at banding location
** ASY - After Second Year adult

For explanation of latitude and longitude abbreviations see footnotes to Table 2

Table 4

Life Table of Swainson's Hawks banded in Saskatchewan, 1923-2001, by years, ending June 30, after banding year

Recovery Location	Age in months				Age in years																		Disqualified	Totals
	1-9	10-12	13-21	22-24	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Sask/Alta	98	1	1	3	8	8	6	3	3	2	3			1	1			1	1	1	1		6	14
USA	7	6	1		5	2	1	1															1	2
S of Rio Grande	6	2	4	1	6	2	1	4	3	1	1	1	1	1		1							2	3
	111	9	6	4	19	12	8	8	6	3	4	1	1	2	1	1	0	1	1	1	1	1	9	21

their first birthday, I compiled a life table based on all Saskatchewan banded Swainson’s Hawks (Table 4). A life table shows the complete mortality data of a population, with respect to age, i.e. the age at which known deaths have occurred, and gives an idea of how long individual birds are likely to live.⁹

Some of the age categories in Table 4 require explanation. A recovery made in Jul-Dec of the “calendar year of hatching” is what banders call a “direct recovery;” I have extended this to include the wintering area in Argentina, Paraguay and Uruguay through the end of March, when the birds are 9 months old. A recovery in Apr-Jun of the subsequent year leading up to July 1 when the bird is deemed to have had its first birthday, I have called “semidirect.” Birds are classed as one year of age starting July 1 of the year after banding, but those encountered during the spring of the subsequent calendar year, when 21 to 23 months old, are ones that have made two trips to South America and back. These two categories of year-old birds have been separated in Table 4.

Five questionable records, initially within the age range of 9-12 months, were re-assigned the status of “direct” recoveries in Table 4, for the following reasons. Reports of two different hawks, mailed in on March 23 and March 29, were dated before any Swainson’s Hawks had returned, and must have originated from the banding year. A skeleton of a dead bird that had never left its nest was not reported until a year later. A band on a skeleton, found by a highway cleaning crew on April 5, clearly had been

there all winter. A May 5 hawk leg with a band on it near a coyote den most probably dated from the previous year. The remaining April-June record was a letter posted on 17 April that failed to mention a date of finding; the band finder could not be contacted, and hence this record, the sole entry for the age category of 10-12 months, remains somewhat doubtful without a confirmed date of finding. The single Saskatchewan entry for 13-21 months was a hawk found fatally injured after its first birthday, within 10 km of its banding site, on August 31. The band finder could not be reached for confirmation.

With other species, in contrast with the banding results of Swainson’s Hawk, the second-highest number in a life table is of birds in their second year of life. The other three “one-year-olds” were 22-24 months old before June 30 in the summer after their second trip to South America. Note the paucity of records for year-old hawks aged 13-24 months in Table 4, lower than for ages 2 and 3 years.

Nine-month-old Swainson’s Hawks in their first journey back north from Argentina seem to lag behind mature birds, if one accepts the accuracy of band reporting dates. One such hawk was shot in Argentina on the late date of May 5, and another was behind schedule when it was shot in Colombia on an unspecified day in April. Similarly, individuals shot in Oklahoma and in South Dakota, both on May 10, and those found dead in Nebraska on June 1 and in South Dakota on an unspecified day in June, were unexpectedly far south for the date. These hawks would fit with my hypothesis that they were destined to spend their first

summer somewhere south of where they had been raised the year before.

As is the case with all bird species studied to date, the peak of mortality is in the first nine months after banding, from July to March. But, in striking contrast to all other species I have studied, year-old Swainson’s Hawks do not form the second largest number in the life table. This almost total lack of year-old birds returning to their breeding locality is similar to the experience of Woodbridge et al., who found a “virtual absence” of subadult hawks in their California study area. They suggested that “these birds spend their second summer elsewhere.”¹⁴

The absence of year-old banded birds is supported by a lack of sightings of banded or unbanded first-year plumage birds in the Kindersley area. Some first-year Swainson’s Hawks are presumed to show the very white plumage pictured in the extreme lower left figure on page 120 of Sibley as one of the three colour variations at this age, and in Brian Wheeler’s plates, pages 291-292.^{12, 13} Only in 2004 did we twice see the light plumage as far north as Bickleigh, southwest of Rosetown, Saskatchewan.

In striking contrast are the observations of Martin Bailey in a 110 by 13 km band of land paralleling highways 39 and 6 between Weyburn and Regina.¹ Bailey has reported up to 200 hawks in this light-coloured plumage, presumptive year-old Swainson’s Hawks, in late June and early July, 1997, suggesting that substantial numbers of non-breeding hawks may return north only as far as extreme southern Saskatchewan. We hope others will be stimulated to watch for the light plumage of presumed year-old hawks, keeping track of locations and dates.

Colour banding

My eight-year colour banding project, begun in 1988 and restricted to the aforementioned Kindersley map sheet, had

three objectives: to see if we could increase the number of band encounters by using a second band with an easily readable number; to learn whether or not Swainson’s Hawks return to the approximate area where they were raised; and to learn where they spend their second calendar year. Swainson’s Hawks are relatively tame, perch on poles and fenceposts and often allow a close approach. On such occasions it is possible to obtain a clear view of unfeathered tarsi.

I purchased anodised alpha-numeric bands from A-Craft in Edmonton, each with one letter of the alphabet and one number in white on the colour background. These colour bands cost \$4.70 and \$4.75 each. In each instance, the numeral was on top and the letter below, repeated four times around the circumference of the band,

e.g. 9 9 9 9
 D D D D

My helpers and I applied green bands to the left leg of 107 nestling Swainson’s Hawks in 1988 and 93 to the right leg in 1989. Black bands were applied to the left leg of 128 hawks in 1990, and to the right leg of 97 in 1991 and 75 in 1992. Orange bands were applied to the right leg of 37 hawks in 1993, the right leg of 128 in 1994, and the left leg of 19 in 1995. Each nestling had a standard aluminum band applied to the other leg.

In each subsequent year, two or three weekends were spent in the Kindersley area in the last half of June, banding Ferruginous Hawk nestlings, and in the last half of July, banding Swainson’s Hawk nestlings. During each of these visits, we scrutinized each perched Swainson’s Hawk carefully. Some hawks did not sit still long enough for us to focus binoculars on the legs of the sitting bird, but others were close enough that at least the presence or absence of leg bands could be determined without doubt.

The Swainson’s Hawk usually does not breed until at least three years of age.¹⁴ We

Table 5

RECOVERY RATES FOR SWAINSON'S HAWKS, 1988-1995

Encounters with aluminum and colour bands			Encounters with aluminum bands only	
Banding	Number	Number	Number	Number
Year	banded	encountered	banded	encountered
1988	107	1	56	1
1989	93	4 *	28	0
1990	128	3	64	1
1991	97	5	35	4
1992	77	2	68	1
1993	37	2 *	20	0
1994	128	1	46	2
1995	17	1	104	4
Total	684	19	421	13
		2.8%		3.1%

* another two each year were sighted near nest before achieving flight

fully expected that Swainson’s Hawks would return to breed near their nest of origin at three or more years of age, and thus, beginning in 1991, we should have seen some breeding hawks with two bands, one aluminum and one coloured,

Throughout this study, we saw over 80 adult unbanded Swainson’s Hawks each year, and counted our maximum number of unbanded adults, 102, during 1994. We sighted an aluminum band on two different hawks, but saw none with a colour band. Brian Woodbridge found no harmful effects from his long-term studies in northwestern California, where he sights or recaptures many birds each year,¹⁴ so I doubt that the second band was harmful in any way, for example by impeding prey capture.

Clearly, the addition of the readable colour band did not improve the band reporting rate. Only 23 of the 684 hawks colour-banded in these eight years were recovered elsewhere by band finders. This is a slightly smaller percentage than the number of encounters of birds with aluminum bands alone during the identical time period (Table 5).

We were therefore surprised when sightings of two of our colour bands were made at a distance.

A female nestling with green 4T colour band applied near Mantario, Saskatchewan, on July 24, 1988, was sighted twice at its nest by Schmutz near Richdale, Alberta, on July 15, 1991 (presumably its first year of breeding), and on June 5, 1995. The other hawk with a colour band near a presumed nest site, banded as a male nestling with green 9A near Mantario on July 29, 1989, was trapped and released by a falconer near Caronport, Saskatchewan, on June 4, 1998.

Natal dispersal of Saskatchewan-banded hawks

We next studied natal dispersal, the direction and distance of movement from the birth location to first breeding location (breeding dispersal refers to movements between successive breeding sites).⁵

To determine natal dispersal distances within Saskatchewan and Alberta, I restricted myself to evidence from 200 recoveries of dead birds and another 12 encounters of live

Table 6
NATAL DISPERSAL WITHIN SASK AND ALTA OF SASKATCHEWAN-BANDED NESTLING SWAINSON'S HAWKS

Recovery data						Banding data						
Band number	Age when found (yr)	Date	Distance km	Location Lat Long		How found*	Date	Location Lat Long		Bander		
HAWKS RECOVERED DEAD DURING THE BREEDING SEASON (mean 33.3 km)												
2605205	1	May	1938	150	505	1081 SK	1	Jul 12	1936	493	1083	Holmes
98785227	1	Jun 18	1988	12	495	1092 SK	45	Aug 1	1986	495	1093	Harris
84790170	2	May 2	1972	22	513	1050 SK	45	Jul 6	1969	512	1051	Houston
98785137	2	Aug 10	1988	0	492	1051 SK	0	Jul 29	1986	492	1051	Harris
98787696	2	Jun 16	1992	0	512	1091 SK	0	Jul 23	1989	512	1091	Houston
98746002	2	Jul 6	1987	57	510	1091 SK	0	Jul 21	1985	513	1092	Houston
61722056	3	May 1	1976	138	523	1092 SK	0	Jul 19	1972	514	1075	Houston
61722191	3	Aug 11	1977	22	512	1061 SK	0	July 7	1974	510	1060	Houston
180779714	3	Jul 11	2003	19	522	1064 SK	45	Jul 24	2000	521	1064	Houston
180779778	3	Jul 23	2003	23	520	1065 SK	14	Jul 27	2000	520	1063	Houston
180712717	4	May 17	2000	0	520	1063 SK	0	Jul 28	1995	520	1063	Houston
98725094	4	May 18	1982	74	521	1090 SK	45	Jul 16	1977	513	1090	Houston
98728588	4	Jun 15	1986	39	505	1080 SK	14	Jul 25	1981	511	1081	Houston
98785854	4	Jul 28	1991	19	495	1092 SK	0	Jul 28	1987	500	1092	Harris
98785226	4	Jul 5	1990	12	495	1092 SK	45	Aug 1	1986	495	1093	Harris
41667604	4	Jul 19	1945	22	495	1045 SK	1	Jul 9	1941	500	1050	Bird
98742016	5	May 6	1989	12	513	1084 SK	0	Jul 23	1983	513	1085	Houston
98785325	6	May 28	1994	74	490	1084 SK	45	Jul 14	1987	491	1094	Harris
72704432	8	Aug 31	1988	22	514	1090 SK	45	Jul 13	1980	513	1085	Houston
98785043	8	Aug 10	1995	22	514	1091 SK	0	Jul 21	1987	513	1090	Houston
180712857	8	Jul 16	2004	22	505	1082 SK	54	Aug 4	1996	504	1081	Houston
62719633	15	May 23	1979	18	500	1074 SK	0	Jul 26	1963	501	1074	Miller
98724596	17	Jun 10	2001	37	514	1063 SK	14	Aug 4	1984	520	1063	Houston
98742132	18	Jun 14	2002	12	501	1093 SK	0	Jul 8	1983	501	1092	Houston
HAWKS ENCOUNTERED ALIVE DURING THE BREEDING SEASON (mean 208.6 km)												
98727491	2	Aug 4	1985	197	512	1115 AB	89	Jul 14	1979	513	1090	Houston
98746012	3	Jul 26	1988	189	511	1120 AB	89	Jul 21	1985	513	1092	Houston
98787604	7	Jun 5	1995	133	513	1113 AB	52	Jul 24	1988	511	1094	Houston
98787604	3	Jul 15	1991	133	513	1113 AB	52	Jul 24	1988	511	1094	Houston
98728505	5	Aug 6	1986	310	512	1115 AB	89	Jul 24	1981	501	1075	Houston
180714344	8	Jun 4	1998	279	503	1055 SK	89	Jul 29	1989	511	1094	Houston
HAWKS RECOVERED DEAD, SEPTEMBER TO NOVEMBER (mean 213.5 km)												
72703871	2	Oct	1981	508	512	1130 AB	0	Jul 28	1979	513	1054	Houston
98786874	2	Sep 28	1989	30	512	1093 SK	0	Jul 23	1987	511	1095	Houston
61722135	2	Oct unk	1975	433	495	1034 SK	4	Jul 21	1973	512	1092	Houston
180710996	2	Oct 6	1996	168	494	1075 SK	45	Aug 1	1994	511	1081	Houston
72704473	5	Oct 5	1985	98	514	1092 SK	54	Jul 20	1980	511	1081	Houston
61722183	6	Nov 26	1980	30	513	1094 SK	0	Jul 13	1974	512	1092	Houston
98786906	7	Sep 25	1994	0	510	1080 SK	45	Jul 28	1987	510	1080	Houston
98785844	7	Sep 15	1994	279	502	1053 SK	0	Jul 28	1987	495	1092	Harris
38685644	11	Sep 8	1951	227	520	1100 AB	1	Jul 21	1940	511	1070	Fredeen
98787636	12	Sep 20	2000	187	512	1090 SK	0	Aug 7	1988	520	1063	Houston
98740999	19	Oct 2	2001	389	500	1040 SK	0	Jul 24	1982	513	1090	Houston
*How found: 0 - Found dead of unknown cause; 1- shot; 4 - in trap; 14 - hit by car; 45 - on highway; 52 - read by telescope; 54 - electrocuted; 89 - trapped & released in a different 10-minute block from where banded												

birds, including 21 reports of hawks received after the computer printout of hawks banded through 2001. I deleted encounters in the first 12 months and the 34 encounters in subsequent migrations beyond Canada. (The addition of my 2001-2003 data was acceptable only because I was the only Saskatchewan bander during the years of those late additions).

Distances between the birth site and the first breeding site were calculated from banding encounters of three types of birds within Saskatchewan and Alberta: those found dead during the breeding season (May to August) in subsequent years; those found alive during the breeding season; and those found dead within Saskatchewan during fall migration. This information is presented for

each group, sorted by age (years after banding, with July 1 as the first day of each biological year), separately in Table 6.

Mean distances from the nest where the hawk had been raised and its nest as an adult during the breeding season were 33.1 km for 23 hawks encountered dead and 206.8 km for six encountered alive. If we average these two breeding season groups by including six re-trapped or sighted alive at Hanna, Alberta and Caronport, Saskatchewan, the mean distance for all breeding season hawks is 66.7 km.

If one could assume that the direction of dispersal from the natal area to the new breeding area is random (probably false because of habitat variability), and chose 67 km as a mean dispersal distance, then the area of the circle with a radius of this natal dispersal distance, gives us 14,108 square kilometers— an area sufficient for 1410 to 2820 Swainson’s Hawk territories in good habitat assuming one to two pairs per 5 km². These figures, similar to those for Great Horned Owls in Alberta and Saskatchewan,⁷ represent a conundrum. Simply and inexplicably, they do not “square” with our total absence of colour band sightings on and adjacent to the Kindersley map sheet area, at any age. If the absence of colour band sightings could be given credence, then one might postulate that the Kindersley area is a “source” of hawk breeding stock, rather than a “sink.”¹⁰ A net movement away from the Kindersley area by future breeders is supported by the overall population decline there.¹¹

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A SWAINSON'S HAWK STAGING AREA ALONG THE MISSOURI COTEAU IN SOUTHEAST SASKATCHEWAN

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Carol Bjorklund was informed the morning of September 23, 2004 by fellow school bus driver, Russell Moe, that he had seen hawks in the fields for almost a week as he made his rounds. On the evening of September 23, between 5:30 p.m. and 7:00 p.m. we began observations of these hawks—Swainson's Hawks—using a twenty power Bushnell Sentry II spotting scope, eight power Burris and Zeiss binoculars and the truck as a blind.

We made observations on the numbers of Swainson's Hawks from September 23 to October 4, 2004. Over 2,200 were noted between September 23 and 30, and none was reported after this date. The area where the hawks occurred encompasses eight sections (eight square miles) of farmland five miles north of Weyburn. The sections (13 to 16, 21 to 24) lie within township 9-15W2, at approximately 49°44' 55" N 103°55" W.

This total area is under cultivation. Abandoned farmsteads and a few remaining farmyards provide the only trees available for roosting. Hay bales filled three half section (3 x 320 acres) fields but we did not observe hawks perched on these, either day or night.

The crop land farmed in 2004 was seeded to wheat, oats, canola and flax. At the time of the study, much of the crop land had already been swathed or combined, leaving stubble with just the stalks of the crop remaining on the fields. Farm land that had lain fallow during this growing season had either been plowed under (summer fallow) or fallowed using herbicides (chemical fallow).

September 23, 2004

Over 500 Swainson's Hawks were counted

in a quarter section chemical fallow field (160 acres) on September 23 between 5:30 p.m. and 6:30 p.m. The hawks were feeding on grasshoppers. Between 6:30 p.m. and 7:00 p.m. they flew across a road allowance and either landed in a stubble field on the other side of the road allowance or went directly to an abandoned farmyard a quarter of a mile away where they roosted in a grove of trees. By 7:00 p.m. (approximately fifteen minutes after sunset) all the birds had flown to the trees to roost.

September 24, 2004

When we returned to the farmyard the next morning at 9:45 a.m., the hawks were already rising up in kettles (spiralling upward on up-draughts of air) and quickly disappearing southward. They were coming out of the roost trees and off the ground near the trees. Within this area—a section of land (640 acres)—more than 1,100 Swainson's Hawks were rising. In another field farther south, another 100 Swainson's Hawks were rising in kettles and moving south.

At 6:00 a.m. the Weather Network reported a temperature of 2°C. At 9:30 a.m. it was 10°C. By 10:45 a.m. an air temperature of 20°C was recorded at the farmyard. The morning was dead calm with barely perceptible breezes from the east. The wind shifted to the southwest and then quickly turned to west by southwest at Beaufort four (12.4-18 mph).

In the evening, we travelled north on Highway 35 to a gravel road heading west, 22 miles north of the earlier sightings. Going west and back south again, we went back and forth towards the evening roost of the night before.

No Swainson's Hawks were found north of the roost site.

September 25, 2004

In the morning, 519 Swainson's Hawks were counted at the first site and the adjacent two sections of land. The hawks began to rise skyward at 10 a.m. in a south by southwest wind at Beaufort three (7.4-12 mph) increasing to a Beaufort four, and continued on to 11:30 a.m. with the winds gusting to a Beaufort five (18.6-23.5 mph) out of the southwest.

While there was more than one location where the hawks were spiralling upward, one of the most used locations was a mile and a half south, and one mile west, of the original site. Upon examination, we found that it was here that four quarter sections met: a field sown to oats, another to flax, a chemical fallow field and a summer fallow field. At this intersection, the land was slightly bowed with a gradient that was no more than 10 inches lower than the surrounding soil. The earth was black and the ground temperature at the centre of this dimple was 27°C. The air temperature was 21°C.

In the evening, 84 Swainson's Hawks were located in a distinctively orange-coloured field, the telltale sign of the chemical fallow field. By 7:00 p.m. they had all gone to trees on a quarter section of land a mile west.

September 26, 2004

By 9:10 a.m., 64 Swainson's Hawks in two groups were kettling, leaving eight of their mates in the stubble near the night-time roost. The soaring birds headed south, as did the authors.

At 10:10 a.m. we noted a large flock of Swainson's soaring and gliding over Weyburn, heading in a southeasterly direction. Given that we had seen almost 2,000 Swainson's Hawks going over Nickle Dam, (see Figure 1) southeast of Weyburn three years earlier, we headed to the dam. No hawks were observed at the dam, however.

Continuing on south and east through pastureland to high land overlooking Roughbark Creek (which runs south and then east into the Souris River), we caught glimpses of Swainson's Hawks heading south by southeast. Soon we ran out of road and drove along a trail and forded a creek before coming out to paved road that took us across the Souris River. From there to Estevan no more Swainson's Hawks were observed.

September 27 - 30

Daily observations were resumed on 27 September, at the site north of Weyburn. Swainson's Hawks continued to arrive in the area after 27 September but the numbers counted steadily declined from 175 on 27 September to seven on 30 September. Although observations continued until 4 October, no more hawks were seen in the area after 30 September.

The number of Swainson's Hawks seen leaving the area from 23 September until 30 September was 2,289.

Summary

No Swainson's Hawks were seen in fields where the crop was still standing, even though some were thick with grasshoppers. These fields were too dense with vegetation for the hawks to move about in and too high for them to see within. Summer fallow fields, which were clear of all standing vegetation, were totally without attraction to grasshoppers.

The hawks were sometimes found, before they flew up to roost for the night, in stubble fields adjacent to the roost trees. In the morning, as the sun began its rise over the horizon, hawks would be noted in the stubble where they stayed until they either flew to chemical fallow fields or began to kettle.

The hawks foraged in chemical fallow fields where some vegetation could be found. Foraging began after the ground temperature reached 17°C. Perhaps at this temperature the grasshoppers began moving about and were then noticed by the hawks.

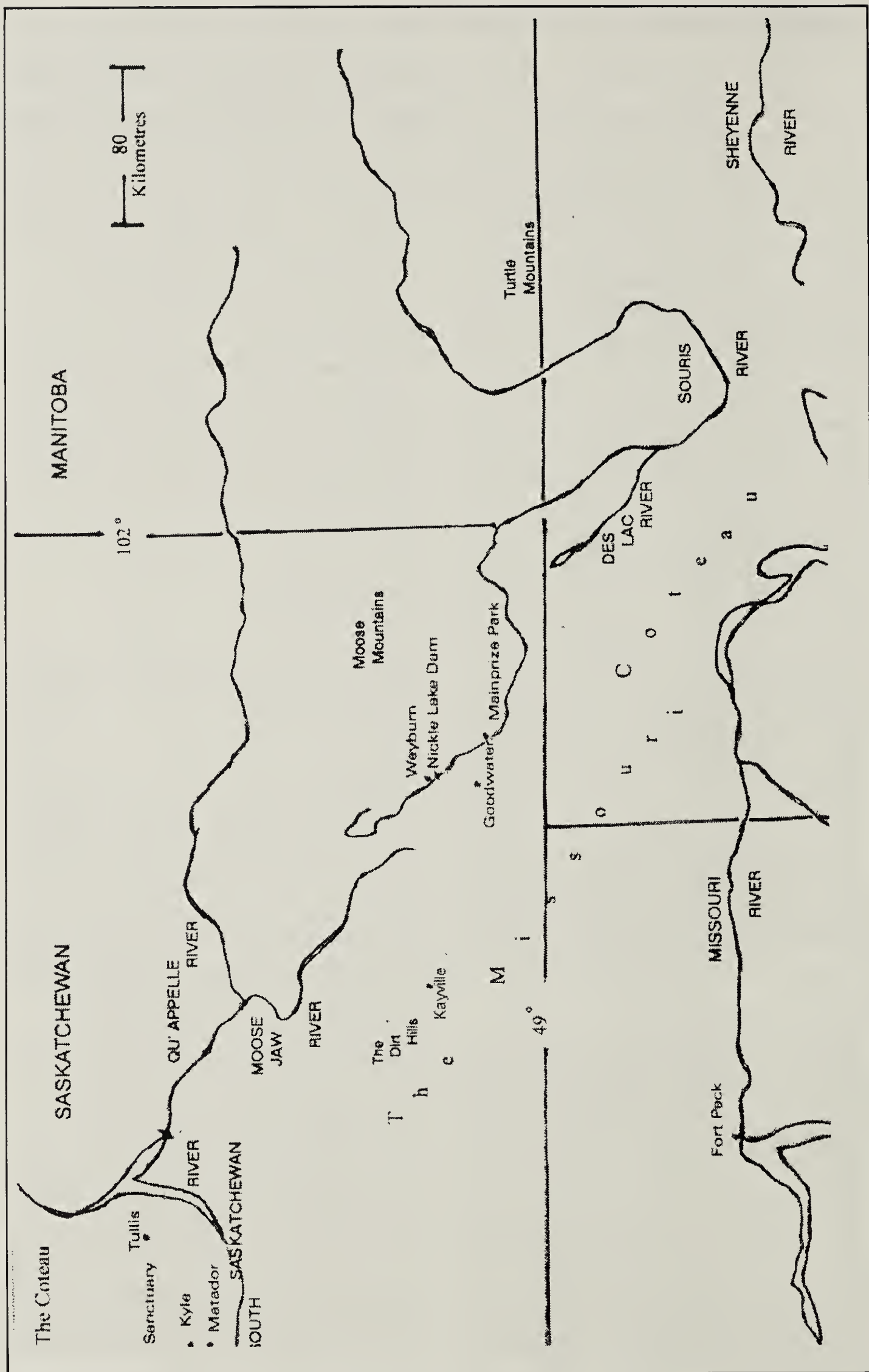


Figure 1. Locations along the Missouri Coteau mentioned in the text.

Roosting began before 6:30 p.m. at night and continued to 7:00 p.m., approximately fifteen minutes after sunset. The hawks came out of the trees just before sunrise. On September 27, within a half hour of sunrise Swainson's Hawks were located a mile away from their overnight roost.

Winds normally started from a dead calm at sunrise and increased to Beaufort three or four by noon over the observation period. Typically, winds were from the east just after sunrise and could shift around until they came out of the northwest as the day progressed. No winds were noted from due south or due north.

Normally, winds from Beaufort three or four, with air temperatures above 21°C after 10:00 a.m. created the conditions for the hawks to kettle and disappear to the south and southeast. However, on 26 September with an air temperature below 20°C, but with winds gusting to Beaufort five out of the northwest, 64 Swainson's Hawks swirled up and vanished into the southeast by 9:15 a.m. On the other hand, on 27 September with the dark earth below a kettle at 30°C and but a wisp of wind, 24 hawks rose on air currents.

Numbers observed varied from over 1,200 on the evening of 24 September to seven on 30 September, the final day that hawks were seen. It simply was not possible for two ground level observers to see everything that could take place in this area at any one time. Nevertheless, it is assumed that flights did not begin before 9:00 a.m. and that the last birds to arrive in the study area came by 5:30 p.m. It is estimated that the median flight day for the Swainson's Hawks that came in and went out of the study area started around 10:00 a.m. and lasted until 4:00 p.m.

Other observations along the Missouri Coteau

The Elbow

Swainson's Hawk records in this area go back 60 years to "the night of 31 August, 1943, a flock of 80 roosted in a few large

poplars at the Roy farm, near Tullis. They returned, but in diminishing numbers, each succeeding night until 12 September. On 23 September, 1986, Robert Wapple counted at least 86 in a stubble field 10 mi. north of Kyle. On 20 September, 1972 near the Matador 138 took shelter in a 0.62 mi. shelterbelt during a snowstorm (Sig Jordheim)..... Bernie Gollop counted 300+ hawks, mostly Swainson's but with a few Red-tails, in a stubble field northwest of Sanctuary, 16.7 mi. south of Elrose, 14 September, 1981. As he watched, most took off in a southeasterly direction. On a clear morning after a rainy spell, 16 September, 1959, Evelyn Boon, Tullis, witnessed a remarkable flight of 700 hawks, the majority apparently Swainson's, flying over the farm from the northwest. She counted them as they passed between the power poles (Boon, 1961, Blue Jay)." ⁷

All these locations are at the northern lip of the Missouri Coteau where "Towards the end of August, Swainson's Hawks begin to gather in large, loose flocks, generally numbering between 20 and 40 birds. They spend the days in field and pasture feasting on crickets and grasshoppers before retiring to telephone and power poles or farm groves to spend the night. Sometimes every telephone pole for a kilometre or more will have a hawk or two roosting on it." ⁷ More recently on September 25, 1996 another 300 + were on high ground ten miles north of Kyle. (G. Pederson, pers. comm.)

Dirt Hills

Heading southeast from "The Elbow" and skirting the Dirt Hills—land fronting the Missouri Coteau—200 plus Swainson's Hawks were seen in fields near Kayville on September 21, 2002. The observers assumed that the hawks were grounded by unsettled weather; cloudy skies, 5°C temperatures and driving rain.¹⁰

Satellite tracking of 34 Swainson's Hawks concluded that they travel an average of 115 miles a day southward with slower than the

average flight speed of 90 miles a day at the beginning their migration.³ Hence, it is a day's flight from the Kyle area to the Dirt Hills and then another day on to the plains around Regina and from there to north of Weyburn where they overnighted during 2004 from September 20 and 27. (Records for the Regina area indicate that Swainson's Hawks all but vanish from that region by the third week of September.¹)

Souris River drainage

Other Saskatchewan records come from locations along this flyway over the Souris River watershed. A flock of 23 flying by Mainprize Park on the Souris River on September 27, 1986 was noted by Guy Wapple. That evening a further 105 were seen south of Mainprize Park at Henry and Della Pederson's farm. The next day heading back northwest, Guy counted 425+ Swainson's Hawks, at midday outside of Weyburn. (G.J. Wapple, pers. comm.) Similarly, we sighted almost 2,000 on the Souris River watershed at Nickle Lake on September 28, 2001² and a flock was seen this year on September 26 going south by southeast over Goodwater.

Des Lacs and Sheyenne rivers

This flight path continues on into North Dakota where the largest flock for that state—300 Swainson's Hawks—was seen on September 26, 1986 at the southernmost bend of the Souris River (Ron Martin, pers. comm.). Along the Des Lacs River valley, they are seen yearly at the end of September and into the beginning of October (Bob Murphy, pers. comm.).

In 2004, the first sighting on September 25 of a flock of 50 Swainson's Hawks in North Dakota was on the edge of the Sheyenne Valley in Beane County in southeast part of the state. (Ron Martin, pers. comm.) From there the Sheyenne River runs in a southeasterly direction to meet the Wild Rice River. River systems continue south into South Dakota and past where the Missouri Coteau ends at the border of Nebraska and South Dakota.

A radio collared Swainson's Hawk that went southeast from Kindersley, Saskatchewan, on August 26, 1996 appears to have funneled along the Souris River basin into North Dakota as the aforementioned birds did, then down the Missouri River basin, and then east of the Missouri Coteau into Nebraska.⁴

While the telemetry mentioned in this article cannot be used to fine tune recurring flight paths for Swainson's Hawks in Saskatchewan, ("Most radios were programmed to send a signal [one to four times in eight hours] every sixth day")⁵ our observations echo this work.³ The general direction of the prevailing surface winds between September and November in the Province (out of the northwest) correlate with the direction that the Swainson's Hawk with the radio pack flew, as did the prevailing winds in the spring with that bird's return flight to Kindersley the next year.^{4,5}

Conclusion

Much of the hawk behaviour we observed was governed by daylight, winds, and differences in air and ground temperature. They do not move at night, nor feed before the ground warms up and sparks their food supply (grasshopper) to activity. The hawks only flew away when rising air and wind currents were in their favour.

Birders' observations and inferences based on radio telemetry point to a migration route out of Saskatchewan that follows the eastern edge of the Missouri Coteau and the Souris River basin.

There are unseen currents of air over the Northern Plains, rivers and valleys to follow, and man-made places where Swainson's Hawks find food and refuge. It will require patience and further systematic observations of Swainson's Hawk migratory flights to link together all of the Swainson's Hawk pathways through Saskatchewan and North Dakota and onward to Central America. Nevertheless, the

direction of flight inferred from the map accompanying this article follows some of the characteristics of the movement of air on the Wind Energy Flow Map for North America.¹² The direction of a major wind energy flow coincides with that of the Swainson's Hawk's flight from west-central Saskatchewan to the southeast and then due south at the American border to eventually curl west as it enters Texas.¹¹ Hence, the probable flight path for the SWHA leaving Saskatchewan from the southeast would be to fly south staying east of the Missouri Coteau and west of the Pembina Escarpment as does this wind system through North Dakota.

Continuing east of the Missouri Coteau through South Dakota and west of the Prairie Coteau, the hawks are funneled into Nebraska where "very large flocks have been observed."⁸ Flocks of 100 or more Swainson's Hawks are regularly seen in the counties in southeast Nebraska and in Pottawattomie County, Iowa bordering the shore of the Missouri River across from Douglas County, Nebraska.⁹ The hawks then travel on through Kansas to Oklahoma and Texas where the migratory pathway is especially narrow as is the wind energy flow that originated back on the Saskatchewan plains.⁸

These winds are not the strongest occurring over continental North America.¹¹ They are strong enough to propel wind turbines but are not strong enough to make it difficult for a hawk to land or alter its direction of flight.

The importance of thermals also can be speculated upon. Of three commonly found buteos in Saskatchewan (Swainson's, Red-tailed and Rough-legged hawks) Swainson's Hawks arrive on the Saskatchewan plains the latest and leave the earliest.^{1,6} This suggests that of the three buteos, Swainson's Hawks make the most use of thermals, which are

more likely to occur when these hawks arrive here and leave this region. In comparison, Rough-legged Hawks arrive when ground temperatures are just beginning to lose their chill and migrate out when air temperatures start to fall to winter values.

One cannot but conclude that Swainson's Hawks are a paradigm of the efficient use of different types of air currents to travel great distances with the minimum expenditure of energy.

(This article is dedicated to Wayne C. Harris, who knew and cared, and drew us into his circle.)

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MAMMALS

32nd ANNUAL SASKATCHEWAN
CHRISTMAS MAMMAL COUNT-2004.

ALAN R. SMITH, 115 Perimeter Road, Saskatoon SK S7N0X4.

Mammal counts (Table 1) were received from 95 of the 99 localities submitting Christmas Bird Counts (CBC). The 33 species of mammals seen or heard on count day was second only to last year’s 35 species and tied totals for 2002, 1995 and 1991.

The most abundant mammal was the White-tailed Deer, closely followed by the Mule Deer. The American Red Squirrel and Pronghorn placed third and fourth. The most frequently seen mammals involved the White-tailed Deer on 71% of all counts, the Coyote on 59%, the American Red Squirrel on 53%, and the Mule Deer on only 38%.

No new species were recorded, but the Least Chipmunk was recorded for only the third time and for the second year in a row. One was seen at Fort Qu’Appelle. The previous records include one seen at Archerwill and tracks noted at Saskatoon in 2003.

Another good find for the Fort Qu’Appelle count was a Short-tailed Shrew. A Fisher on the Spinney Hill count was south of its normal boreal forest range. Although identified only by tracks, a Woodland Caribou at Candle Lake was of interest as was a den considered to be that of a Swift Fox in Grasslands National Park.

For information on participants, weather, coverage and location of Christmas Mammal Counts see the CBC summary in this issue.

The number of mammals actually seen or heard on count day is treated separately from those recorded by other means, or those

recorded during count period (14 December to 5 January, as with the CBC) but not on count day. Numbers of individuals seen or heard are given in the table and are tallied in the first line of totals at the bottom of Table 1. The number of species they represent is given in the second line.

For animals detected by tracks, by other means, or that are seen or heard in the count period but not on count day, we tabulate only the species *additional to* those actually seen or heard and no number of individuals is given. Species detected only by tracks are indicated by ‘t’ in the table; those detected only by other means (dead animals or clearly identifiable chewing, digging, dens or lodges) by ‘o.’ Species detected by any means during the count period, but not on count day are indicated by ‘c’ in the table. These additional species are tallied in lines 3, 4 and 5 at the bottom of the table. If a mammal is reported as member of a species group (i.e. mouse species, deer species), it is counted as a species only if no other species in this group has been definitely recorded.

The columns at the end of the table give totals for each species. The first shows the total number of individuals seen or heard on count day. The second gives the number of counts on which the species was seen or heard on count day. Columns 3 and 4 give the number of counts on which the species was recorded only by tracks or other signs. Column 5 shows the number of times the species was recorded during the count period (except count day). The last gives the sum of the count days and count periods reporting each species.

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	1	2	3	4	5	6	7	8	9	10	11	12
	Archerhill, 20 Dec 2004	Armit, 4 Jan 2005	Bangor, 10 Jan 2005	Bethune-Dilke, 9 Jan 2005	Biggar, 27 Dec 2004	Birch Hills, 18 Dec 2004	Brightwater, 23 Dec 2004	Broadview, 24 Dec 2004	Bromhead, 19 Dec 2004	Cabri, 27 Dec 2004	Candle Lake, 2 Jan 2005	Cherry Lake, 2 Jan 2005
Short-tailed Shrew												
Shrew Species												
Nuttall's Cottontail										1		
Snowshoe Hare	t				t	1	t	t			t	
White-tailed Jack Rabbit	t		9		t					1		
Least Chipmunk												
Eastern Grey Squirrel			1					1				
Fox Squirrel												
American Red Squirrel	2					2		2			t	
Northern Flying-Squirrel												
American Beaver						o		o				
Deer Mouse			t									
Muskrat									1			
Gapper's Red-Backed Vole												
Meadow Vole						o						
Vole Species						2						
Mouse Species	t							t		t		t
Norway Rat												
House Mouse												
American Porcupine	t					t				t		o
Coyote	1	t			9	1	1	1	t	t		
Wolf	c	t									t	
Red Fox	c		1									
Swift Fox												
Raccoon												
American Marten												
Fisher												
Ermine											t	
Long-tailed Weasel								t		t		
Least Weasel												
Weasel Species	t											
American Mink												
American Badger									o			
Striped Skunk			2									
River Otter											t	
Lynx												
Woodland Caribou											t	
Mule Deer	11				61			8		11		
White-tailed Deer		17	t	12	12	t	10	t	28	1	11	
Deer Species												t
Moose	1							t				
Elk	c											
Pronghorn										4		
Totals seen/heard on count day	15	17	13	12	82	6	11	12	29	18	11	0
Total species seen/heard	4	1	4	1	3	4	2	4	2	5	1	0
Total species recorded by tracks	5	2	2	0	2	2	1	5	1	4	6	2
Total species otherwise recorded	0	0	0	0	0	2	0	1	1	0	0	1
Species recorded count period	3	0	0	0	0	0	0	0	0	0	0	0
Total species count period and day	12	3	6	1	5	8	3	10	4	9	7	3

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	14	15	16	17	18	19	20	21	22	23	24	25
	Clark's Crossing, 18 Dec 2004	Codette Lake, 2 Jan 2005	Coronach, 2 Jan 2005	Craven, 18 Dec 2004	Crooked Lake, 17 Dec 2004	Crooked River, 29 Dec 2004	Cypress Hills P.P., 29 Dec.2004	Duck Lake, 21 Dec 2004	Dundurn, 5 Jan 2005	Eastend, 3 Jan 2005	Emma Lake, 17 Dec 2004	Endeavour, 26 Dec 2004
Short-tailed Shrew												
Shrew Species												
Nuttall's Cottontail							2			2		
Snowshoe Hare	4	t					1	t	t		t	t
White-tailed Jack Rabbit			2						t	23		
Least Chipmunk												
Eastern Grey Squirrel				4								
Fox Squirrel				3								
American Red Squirrel	1	2		5		1	3	6	t		5	3
Northern Flying-Squirrel												
American Beaver					o							
Deer Mouse									t			1
Muskrat												
Gapper's Red-Backed Vole												
Meadow Vole									t			
Vole Species							t					1
Mouse Species			t					t				
Norway Rat												
House Mouse												
American Porcupine		t		t								t
Coyote	1	1	1	4	t		t	1	t	2		1
Wolf												
Red Fox	3	t	1	1								t
Swift Fox												
Raccoon												
American Marten												
Fisher												
Ermine												t
Long-tailed Weasel		t					3					
Least Weasel							t			t		
Weasel Species	t											
American Mink												
American Badger			o									
Striped Skunk												
River Otter												
Lynx							t					
Woodland Caribou												
Mule Deer	12	t	13	1			12					
White-tailed Deer	12	t	7	9	t	4	3	3	1	5	t	5
Deer Species							12					
Moose							3			2		t
Elk		85										
Pronghorn										9		
Totals seen/heard on count day	33	88	24	27	0	5	39	10	1	43	5	11
Total species seen/heard	6	3	5	7	0	2	7	3	1	6	1	5
Total species recorded by tracks	1	6	1	1	2	0	4	2	6	1	2	5
Total species otherwise recorded	0	0	1	0	1	0	0	0	0	0	0	0
Species recorded count period	0	0	0	0	0	0	0	0	0	0	0	0
Total species count period and day	7	9	7	8	3	2	11	5	7	7	3	10

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	26	27	28	29	30	31	32	33	34	35	37	38
	Esterhazy-Hazelcliffe, 18 Dec 2004	Estevan, 1 Jan 2005	Estuary North, 2 Jan 2005	Fenton, 17 Dec 2004	Fort Qu'Appelle, 18 Dec 2004	Fort Walsh, 18 Dec 2004	Gardiner Dam, 20 Dec 2004	Good Spirit Lake, 29 Dec 2004	Govenlock, 19 Dec 2004	Grasslands, N.P., 4 Jan 2005	Grenfell, 26 Dec 2004	Harris, 31 Dec 2004
Short-tailed Shrew					1							
Shrew Species								t				
Nuttall's Cottontail			8			t	4		2	1		
Snowshoe Hare				t			t	t				
White-tailed Jack Rabbit			2			2	1	t	3	2	t	1
Least Chipmunk					1							
Eastern Grey Squirrel												
Fox Squirrel		1										
American Red Squirrel	1			8	12	25		3				
Northern Flying-Squirrel												
American Beaver				7	c			o				
Deer Mouse					3							
Muskrat					1			o				
Gapper's Red-Backed Vole												
Meadow Vole								t				
Vole Species				t		1						
Mouse Species												
Norway Rat												
House Mouse					1							
American Porcupine						2		t				
Coyote			2	3	1		1	2	5	12		t
Wolf												
Red Fox					c			t	1	o		
Swift Fox										o		
Raccoon												
American Marten												
Fisher												
Ermine								t		t		
Long-tailed Weasel									1			
Least Weasel												
Weasel Species												
American Mink								t				
American Badger								1				
Striped Skunk												
River Otter												
Lynx												
Woodland Caribou												
Mule Deer		2	111		c	39	33		112	117		141
White-tailed Deer		2	150	t	5	39	35	6	3	142		16
Deer Species												
Moose												
Elk						t		t				
Pronghorn									69	84		17
Totals seen/heard on count day	1	5	273	18	25	108	74	12	196	358	0	175
Total species seen/heard	1	3	5	3	8	6	5	4	8	6	0	4
Total species recorded by tracks	0	0	0	3	0	2	1	9	0	1	1	1
Total species otherwise recorded	0	0	0	0	0	0	0	2	0	2	0	0
Species recorded count period	0	0	0	0	3	0	0	0	0	0	0	0
Total species count period and day	1	3	5	6	11	8	6	15	8	9	1	5

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	39	41	42	43	44	45	46	47	48	49	50	51
	Hepburn, 14 Dec 2004	Indian Head, Dec 2004	Kamsack, Dec 2005	Kelvington, 29 Dec 2004	Kenaston, 18 Dec 2004	Kenosee Lake, 29 Dec 2004	Ketchen, 26 Dec 2004	Kilwinning, 18 Dec 2004	Kindersley North, 27 Dec 2004	Kinistino, 2 Jan 2005	Kinloch, 3 Jan 2005	Kutawagan Lake, 25 Dec 2004
Short-tailed Shrew												
Shrew Species												
Nuttall's Cottontail					t							
Snowshoe Hare		27		t							t	
White-tailed Jack Rabbit		9		t	t							
Least Chipmunk												
Eastern Grey Squirrel												
Fox Squirrel		2										
American Red Squirrel		34	3	1		11		8		2	3	
Northern Flying-Squirrel												
American Beaver					o	o					o	
Deer Mouse										t		
Muskrat					o						o	
Gapper's Red-Backed Vole												
Meadow Vole		t				t					t	
Vole Species	t											
Mouse Species				t	t							
Norway Rat				t								
House Mouse				1								
American Porcupine		3			t	t				3		1
Coyote		15	12	t	t	3		1	c	2	t	
Wolf			2									
Red Fox		5	6	t	t	t			c	1		
Swift Fox												
Raccoon		1			t					2		
American Marten			2									
Fisher												
Ermine							1					
Long-tailed Weasel		3			t							
Least Weasel											t	
Weasel Species		2								1		t
American Mink												
American Badger												
Striped Skunk				o	t							
River Otter												
Lynx			1									
Woodland Caribou												
Mule Deer		13	5		26				2			1
White-tailed Deer		48	154	t	5	12	10	4			3	8
Deer Species			4									
Moose		1	4	c	t	t					t	
Elk			8			t	c				t	
Pronghorn					t							
Totals seen/heard on count day	0	163	201	2	31	26	11	13	2	11	6	10
Total species seen/heard	0	12	10	2	2	3	2	3	1	6	2	3
Total species recorded by tracks	1	1	0	7	11	5	0	0	0	1	6	1
Total species otherwise recorded	0	0	0	1	2	1	0	0	0	0	2	0
Species recorded count period	0	0	0	1	0	0	1	0	2	0	0	0
Total species count period and day	1	13	10	11	15	9	3	3	3	7	10	4

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	52	53	54	55	56	57	58	59	60	61	62	63
	Kyle, 3 Jan 2005	La Ronge North, 30 Dec 2004	Last Mountain Lake, 30 Dec 2004	Leader North, 29 Dec 2004	Little Manitou Lake, 29 Dec 2004	Love-Torch River, 27 Dec 2004	Luseland, 5 Jan 2005	MacDowall, 1 Jan 2005	MacNutt, 28 Dec 2004	Matador, 29 Dec 2004	Mayview, 21 Dec 2004	Meadow Lake, 26 Dec 2004
Short-tailed Shrew												
Shrew Species												
Nuttall's Cottontail	9			2						t		
Snowshoe Hare					t	t		t				t
White-tailed Jack Rabbit	3		1	2	c		4			t		
Least Chipmunk												
Eastern Grey Squirrel												
Fox Squirrel												
American Red Squirrel		3				3		2	3		3	t
Northern Flying-Squirrel												
American Beaver								o				
Deer Mouse	1						c			1		
Muskrat												
Gapper's Red-Backed Vole												
Meadow Vole								c				
Vole Species										1		
Mouse Species				6								t
Norway Rat												
House Mouse												
American Porcupine	1				o			c		1		
Coyote	5		t	1	t	1	4	2	2	6	1	3
Wolf												
Red Fox	t						c	t				t
Swift Fox												
Raccoon						t						
American Marten												
Fisher												t
Ermine								t				
Long-tailed Weasel												
Least Weasel				1								
Weasel Species	t		t			c						t
American Mink						c						
American Badger								o				
Striped Skunk					o							
River Otter												
Lynx		1						t				
Woodland Caribou												
Mule Deer	12		2	11	3		11			51		
White-tailed Deer	40		24	10	1	43		6	t	50		5
Deer Species												
Moose						t	c					
Elk											3	
Pronghorn												
Totals seen/heard on count day	71	4	27	33	4	47	19	10	5	110	7	8
Total species seen/heard	7	2	3	7	2	3	3	3	2	6	3	2
Total species recorded by tracks	2	0	2	0	2	3	0	4	1	2	0	6
Total species otherwise recorded	0	0	0	0	2	0	0	2	0	0	0	0
Species recorded count period	0	0	0	0	1	2	3	2	0	0	0	0
Total species count period and day	9	2	5	7	7	8	6	11	3	8	3	8

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	64	65	66	67	68	69	70	71	72	73	74	75
	Moose Jaw, 27 Dec 2004	Moose Mountain, 22 Dec 2004	Morse, 23 Dec 2004	Nipawin, 28 Dec 2004	Nisbet Forest NW, 14 Dec 2004	Nisbet Forest West, 1 Jan 2005	Pike Lake, 2 Jan 2005	Preeceville, 1 Jan 2005	Prince Albert, 19 Dec 2004	Prince Albert N.P., 22 Dec 2004	Qu'Appelle Dam, 19 Dec 2004	Raymore, 27 Dec 2004
Short-tailed Shrew												
Shrew Species												
Nuttall's Cottontail	t		t									
Snowshoe Hare	2			10	c		2		5	t		
White-tailed Jack Rabbit	2		t	2			1		t			
Least Chipmunk												
Eastern Grey Squirrel												
Fox Squirrel	4											
American Red Squirrel		3		5	c	7	4	4	8	t		t
Northern Flying-Squirrel												
American Beaver									o			
Deer Mouse									t			
Muskrat											1	
Gapper's Red-Backed Vole												
Meadow Vole	t											
Vole Species			1						2			
Mouse Species							t			t		
Norway Rat												
House Mouse												
American Porcupine					o							
Coyote	1	1	4	1	1		4		3	t	2	
Wolf										t		
Red Fox			c	2	c	c	1	1		t		
Swift Fox												
Raccoon												
American Marten										t		
Fisher										t		
Ermine						1						
Long-tailed Weasel				1					t			
Least Weasel												
Weasel Species										t		
American Mink									t			
American Badger			o									
Striped Skunk					c							
River Otter										2		
Lynx												
Woodland Caribou												
Mule Deer			24				2				50	
White-tailed Deer		7	33	15	c		35	8	t	1	24	22
Deer Species												
Moose			3	c								
Elk										t		
Pronghorn												
Totals seen/heard on count day	9	11	65	36	1	8	49	13	18	3	77	22
Total species seen/heard	4	3	5	7	1	2	7	3	4	2	4	1
Total species recorded by tracks	2	0	2	0	0	0	1	0	5	10	0	1
Total species otherwise recorded	0	0	1	0	1	0	0	0	1	0	0	0
Species recorded count period	0	0	1	1	5	1	0	0	0	0	0	0
Total species count period and day	6	3	9	8	7	3	8	3	10	12	4	2

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	76	78	79	80	81	82	83	84	85	86	87	88
	Regina, 26 Dec 2004	Round Lake, 28 Dec 2004	Saltcoats, 28 Dec 2004	Sk. Landing P.P., 21 Dec 2004	Sk. River Forks, 29 Dec 2004	Saskatoon, 26 Dec 2004	Shamrock, 18 Dec 2004	Skull Creek, 26 Dec 2004	Snowden, 31 Dec 2004	Somme, 30 Dec 2004	Spinney Hill, 14 Dec 2004	Spruce Home, SW, 19 Dec 2004
Short-tailed Shrew												
Shrew Species											t	
Nuttall's Cottontail				10				4				
Snowshoe Hare	t	1	1		t	3			9		t	
White-tailed Jack Rabbit	24	t				14		2	1	1	t	
Least Chipmunk												
Eastern Grey Squirrel	2											
Fox Squirrel	4											
American Red Squirrel	8	4	2		7			2	10	8	9	2
Northern Flying-Squirrel									c			
American Beaver	o	o				3						
Deer Mouse	t			t						c	t	
Muskrat												
Gapper's Red-Backed Vole												
Meadow Vole	t	1			1	t			t			
Vole Species				t								
Mouse Species												
Norway Rat									t			
House Mouse										c		
American Porcupine			o	2	t	1						
Coyote	5	4	1	7	t	3	1	4	1	1	2	c
Wolf												
Red Fox	1	t		2	1	1		1		1		c
Swift Fox												
Raccoon									t			
American Marten												
Fisher											1	
Ermine						1						
Long-tailed Weasel					t			2	t			
Least Weasel												
Weasel Species				t								c
American Mink												
American Badger							o	1				
Striped Skunk			o									
River Otter												
Lynx												
Woodland Caribou												
Mule Deer	16	t		52		4	2	55		c	1	
White-tailed Deer	3	t	5	15	t	54	4	75	8	25	4	
Deer Species							34					
Moose									t	1		
Elk					t					10		
Pronghorn				34								
Totals seen/heard on count day	63	10	9	122	9	84	41	146	29	47	17	2
Total species seen/heard	8	4	4	7	3	9	3	9	5	7	5	1
Total species recorded by tracks	3	4	0	3	6	1	0	0	5	0	4	0
Total species otherwise recorded	1	1	2	0	0	0	1	0	0	0	0	0
Species recorded count period	0	0	0	0	0	0	0	0	1	3	0	3
Total species count period and day	12	9	6	10	9	10	4	9	11	10	9	4

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

Map number	89	90	91	92	93	94	95	96	97	98	99
	Squaw Rapids, 5 Jan 2005	Stenen, 1 Jan 2005	Swift Current, 27 Dec 2004	Togo, 3 Jan 2005	Torch River Valley, 29 Dec 2004	Turtle Lake, 21 Dec 2004	Turtleford, 29 Dec 2004	Weyburn, 21 Dec 2004	White Bear, 4 Jan 2005	Whitewood, 2 Jan 2005	Yorkton, 18 Dec 2004
Short-tailed Shrew										t	
Shrew Species											
Nuttall's Cottontail			2						1		
Snowshoe Hare	t			3		2	1			t	1
White-tailed Jack Rabbit			8			1		2		t	1
Least Chipmunk											
Eastern Grey Squirrel			16							c	
Fox Squirrel								4		c	
American Red Squirrel		6		4	11	3	6			2	3
Northern Flying-Squirrel				1							
American Beaver							o			o	
Deer Mouse			t				t				
Muskrat			1								
Gapper's Red-Backed Vole							t				
Meadow Vole										t	
Vole Species			1								
Mouse Species											
Norway Rat											
House Mouse											
American Porcupine				t							t
Coyote	t		t	t	15		2		1	5	1
Wolf	t			t	t						
Red Fox		2	t	1			t			t	o
Swift Fox											
Raccoon							t				
American Marten	t										
Fisher											
Ermine	t										
Long-tailed Weasel											
Least Weasel	t										
Weasel Species			t		1		t				
American Mink			t								
American Badger							o				o
Striped Skunk			o								
River Otter											
Lynx											
Woodland Caribou											
Mule Deer			25	t			c		10		
White-tailed Deer	5	8	18	6	14	15	1	29		8	t
Deer Species											
Moose					t		3			t	
Elk	75			t							
Pronghorn											
Totals seen/heard on count day	80	16	71	15	41	21	13	35	12	15	6
Total species seen/heard	2	3	7	5	4	4	5	3	3	3	4
Total species recorded by tracks	6	0	5	5	2	0	5	0	0	6	2
Total species otherwise recorded	0	0	1	0	0	0	2	0	0	1	2
Species recorded count period	0	0	0	0	0	0	1	0	0	2	0
Total species count period and day	8	3	13	10	6	4	13	3	3	12	8

Table 1. 32nd Saskatchewan Christmas Mammal Count-2004.

	# individuals seen/heard count day	# Counts seen/heard	# Counts recorded as tracks	# Counts recorded as other	# Counts, count period	# Counts, count period & count day
Short-tailed Shrew	1	1	1	0	0	2
Shrew Species	0	0	2	0	0	2
Nuttall's Cottontail	48	13	5	0	0	18
Snowshoe Hare	73	16	25	0	1	42
White-tailed Jack Rabbit	124	27	13	0	1	41
Least Chipmunk	1	1	0	0	0	1
Eastern Grey Squirrel	24	5	0	0	1	6
Fox Squirrel	18	6	0	0	1	7
American Red Squirrel	275	50	5	0	1	56
Northern Flying-Squirrel	1	1	0	0	1	2
American Beaver	10	2	0	13	1	16
Deer Mouse	6	4	9	0	2	15
Muskrat	4	4	0	3	0	7
Gapper's Red-Backed Vole	0	0	1	0	0	1
Meadow Vole	2	2	10	1	1	14
Vole Species	9	7	4	0	0	11
Mouse Species	6	1	11	0	0	12
Norway Rat	0	0	2	0	0	2
House Mouse	2	2	0	0	1	3
American Porcupine	14	8	12	4	1	25
Coyote	178	56	17	0	2	75
Wolf	2	1	6	0	0	7
Red Fox	33	19	14	2	7	42
Swift Fox	0	0	0	1	0	1
Raccoon	3	2	4	0	0	6
American Marten	2	1	2	0	0	3
Fisher	1	1	2	0	0	3
Ermine	3	3	6	0	0	9
Long-tailed Weasel	10	5	7	0	0	12
Least Weasel	1	1	4	0	0	5
Weasel Species	4	3	10	0	2	15
American Mink	0	0	3	0	1	4
American Badger	2	2	0	7	0	9
Striped Skunk	2	1	1	4	1	7
River Otter	2	1	1	0	0	2
Lynx	2	2	2	0	0	4
Woodland Caribou	0	0	1	0	0	1
Mule Deer	1062	37	3	0	3	43
White-tailed Deer	1403	67	13	0	1	81
Deer Species	50	3	1	0	0	4
Moose	18	8	9	0	3	20
Elk	181	5	7	0	1	13
Pronghorn	217	6	1	0	0	7
Totals seen/heard on count day	3794					
Total species seen/heard		33				
Total species recorded by tracks			30			
Total species otherwise recorded				8		
Species recorded count period					19	
Total species count period and day						39

NOTES AND LETTERS

EASTERN BLUEBIRDS FOUND DEAD IN NEST BOXES AFTER SPRING BLIZZARD

May 11 and 12, 2004, brought a severe and prolonged blizzard to southern Manitoba. Whipped by strong winds, 41 cm of wet, heavy snow fell from early morning of the 11th until after 6 p.m. on the 12th. Temperatures hovered around zero. Power failed in many areas. Highways were closed. Emerging gardens were buried. Trees sagged under the accumulating weight of snow, and many snapped, even some stout Bur Oaks. On the third day, the sun appeared, but the temperatures remained cold and so there was no quick melt.

At our home on the south-facing bank of the Assiniboine River Valley near Treherne, Manitoba, we operate bird feeders throughout the winter. These feeders attract a variety of spring migrants. The storm brought birds that we have never observed at our feeders before, including a Northern Cardinal (the first we had ever seen!), Brown Thrashers, towhees and Bobolinks, as well as goldfinches, Rose-breasted Grosbeaks and several species of sparrow. We found it necessary to go out every hour or so to remove snow from the feeders.

In the garden on the sheltered side of our home, we noticed a strange dark clump on one of the shrubs, which turned out to be eight Tree Swallows, huddled together in a sad, bedraggled mass. Obviously, we could not feed them, though we called two experienced ornithologists for their ideas on what could be fed to birds whose diet consists of flying insects. At dusk on the 12th, all eight of these birds were observed climbing into a nest box in the garden.

The morning of the 13th, after the storm ended, I opened the box fearing to find it filled with dead swallows, but found it empty. My interest now aroused, I opened a second nest box in our yard. This box was half filled with snow. I left the box open to dry and then began

a tour of all our nest boxes, a difficult task through knee deep, wet snow.

We have 40 bluebird nest boxes in the two square mile area around our home. We share the nest boxes with our neighbour Hartley Woodward, a committed lover of bluebirds who constructed most of the boxes. I called Hartley on the morning of May 13, asking him to check his boxes in case some of them were snow filled. What we found shocked us, for there was not one live bird or nestling in any of the boxes.

One box had four dead male bluebirds inside, and several contained three dead. One nesting pair of bluebirds died with their eggs. One box had a dead Tree Swallow lying on top of four frozen bluebird eggs. The total number of dead birds was one Tree Swallow, two bluebird nestlings, eleven male bluebirds and one female bluebird. We do not know what became of all the other bluebird females. We also found twenty-eight frozen bluebird eggs. Four boxes were snow filled. The remaining boxes were empty. Since that time, until this writing on May 30, 2004 none of us has seen a bluebird. Tree Swallow numbers are significantly reduced, though a few are present. We found no tree swallow eggs or young, and we do not know what became of the eight bedraggled birds we had seen in the garden.

One ornithologist that we consulted suggested that the dead male bluebirds found clustered in boxes would have been on territory, where they hung on until it was too late, succumbing to hunger from the prolonged absence of insects. As this storm covered all of southern Manitoba and southeast Saskatchewan, we think that the impact on the bluebird population will have been severe.

- Ardythe McMaster, Box 40, Rossendale, MB R0H 1C0.

JACOB'S WOUND: A SEARCH FOR THE SPIRIT OF WILDNESS

TREVOR HERRIOT. 2004. McClelland and Stewart, Toronto. ISBN 0-7710-4136-5
Hard cover. \$34.99 Can.

Most members of Nature Saskatchewan, particularly those from Regina, know Trevor Herriot as a naturalist and an accomplished artist. It wasn't until the publication of his first book, *River in a Dry Land* (2000), that we became aware of his contemplative side and his gifts as a writer. *Jacob's Wound* amplifies the ecological and philosophical concerns raised in his first book, in which he examined the history and natural history of the Qu'Appelle Valley.

Naturalists who pick up this book may be disappointed at first. There are fewer pages of the close description that characterized *River in a Dry Land*. Instead, *Jacob's Wound* is primarily speculative, even deeply spiritual; Nature is now the backdrop as Trevor, using narrative and an array of resources, considers what we have lost as we have become increasingly industrialized, urbanized, and isolated from Nature and our primitive roots.

Trevor's approach becomes clear when he takes us back to the Old Testament story of Jacob and Esau. "In trying to write my own way to a more graceful encounter with the wild, the rural, and the aboriginal, I realized....I would have to begin by retracing our wanderings away from wildness and back again....I took refuge in the old texts, the Bible in particular, as a rough archive of the human spirit at certain critical horizons in our evolution as the primates who got religion" (p. 20) In a superb rendering of the story told in Genesis, Trevor tells how Jacob, representing 'civilization', usurps the birthright of his brother Esau, who remains

a 'wild man', a hunter (p. 77-84). Years later, the day before Jacob is to meet with his brother, Jacob wrestles all night long with an unknown stranger. He is wounded and in the morning fords the river to face Esau. Expecting "bitterness and vengeance," he finds "reconciliation and peace." Trevor sees this story as an archetype of reconciliation; Jacob, recognizing the face of God in his half-wild brother, begs to "be blessed by all that is primary and ancestral and holy" (p. 84). For Herriot, the price of continuing a meaningful existence on this planet is to come to terms with the pagan, the wild, the primitive within us, the remnant of wilderness from which we came and from which contemporary society (and religion) are almost completely alienated.

Among the places Trevor takes us in his narrative, El Marahka (Mount Carmel), a mountain in Israel and a sacrificial site for 60,000 years, is central in the first half of the book. The second half is more closely connected physically with Saskatchewan, his native province. Drawing upon a lifetime of experience living in both rural and urban areas of the province, he singles out Lake Diefenbaker, the Qu'Appelle Valley (including "The Land" – the name he gives to his cabin in the valley and the adjoining seventy acres), and Regina. Much of this part of the book is set in St. Peter's Abbey at Muenster, the surrounding countryside and towns, and atop a hill of pilgrimage, known locally as Mount Carmel.

Even a casual perusal of the book reveals the breadth and depth of the author's reading.

He quotes at length from writers whom he admires and from a number of people, mostly from Saskatchewan, who have influenced his thinking. Prominent among the writers are Laurens van der Post, T.S.Eliot, Teilhard de Chardin, Mark Twain, Ron Rolheiser, Thomas Hardy, George Herbert, and Wendell Berry. His spiritual sources include the Jerusalem Bible, the Upanishads, the Tao-te Ching, the first Buddhist Council, and the Qur'an. The mentor to whom he seems most indebted is Father James Gray, a hermit monk, who shares with him the fruits of his thirty years of living alone "in the bush south of the abbey." Trevor also values the commitment and practice of farm-reformers like Peter Farden, Duane Guina, Brewster Kneen, and Paul Brassard, all intent on saving the family farm and the values associated with it. Deeply appreciative of native tradition and spirituality, Trevor also writes admiringly of the life and work of Noel Star Blanket, a prominent Saskatchewan aboriginal, former chief of the National Indian Brotherhood.

This is not an easy book. In an interview with Nick Miliokas, Trevor said, "I hope that people will read the book slowly and let it compost in their minds, so to speak. That's how I read books, and maybe that's why I write them that way."¹ Even if you can't always accept his arguments, you can respect his approach, his openness, and the predictably fine quality of his writing. Trevor offers some answers; more importantly, he raises essential questions. As Miliokas says, "The emphasis here is clearly on the journey as opposed to the destination."

I am impressed with Trevor's bravery and honesty. He shares with the reader his

doubts, his dreams, his loves, and his on again-off again relationship with formal religion. He is at once a romantic and a realist, a poet and a critic. He is what is sometimes disparagingly termed a liberal, yet in some ways deeply conservative in the best of that tradition, appreciative of the past, aware of both the follies and successes. A key concern for him is reconciliation, coming to terms with conflicting views of life. His knowledge of nature has taught him to welcome the richness of diversity. His conclusion: only if we become less rigid, less aggressive, less acquisitive, more open to the primal sources within us, are we likely to survive as a society.

Reflecting on the ideas of Laurens van der Post, the South African writer who lived with the bushmen of the Kalahari, Trevor writes: "Our modern religious and cultural obligation is to re-enter the myth of Jacob at the riverside so that we can re-engage our legacy and culpability as the second sons of creation, and hold on for life until the wrestling becomes an embrace in which we can face and see clearly all that we have subsumed and overtaken – not for guilt or blame, not for that pointless wringing of hands, but for the greater spiritual reckoning that dawns when the sun lifts over the horizon, spills across the river, and shows us that we are in the hands of our ancestral brothers, the first ones who, nearer the Genesis point, bear the face of God and the original blessings we need and must beg for now more than ever." (85-86).

1. MILIOKAS, N. CanWest News Service, The StarPhoenix, Saskatoon, October 23, 2004

Reviewed by J. Frank Roy, 650 Costigan Way, Saskatoon, SK S7J 3R2, E-mail: jfroy@shaw.ca

POETRY

VANGUARD

Wedges of white-fronted geese
driving hard into cold sky
feathered swift projectiles flung
in serried lines
at winter's slow retreating—
phalanges they are of arrowed flight
head-and-neck

 outstretched

 aimed true

Wing-thrust-powered waterfowl
breasting frigid streaming air—
rift the season's polar force
asunder, each
relentless passage leaving
divisions soon to be conquered by
lesser birds
spring late-
comers

- Victor C. Friesen

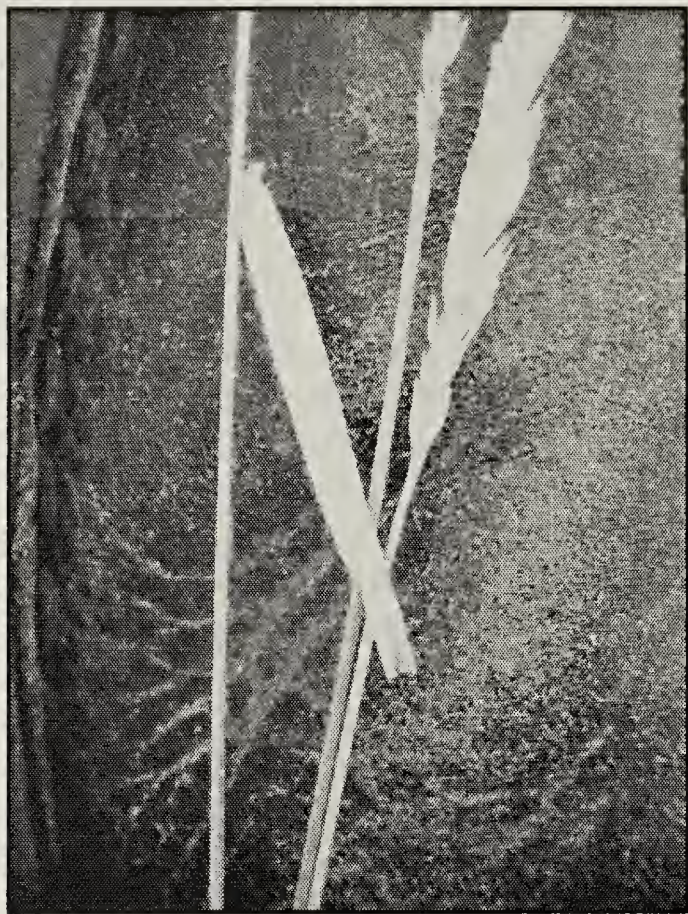
OVERNIGHT APPEARANCE

For a few days after the last spring rain
the dried bodies of numerous earthworms
lay scribbled on the sun-warmed pavement
their rain-inspired nocturnal forays
producing a kind of natural graffiti.

- Bob Nero

MYSTERY PHOTO

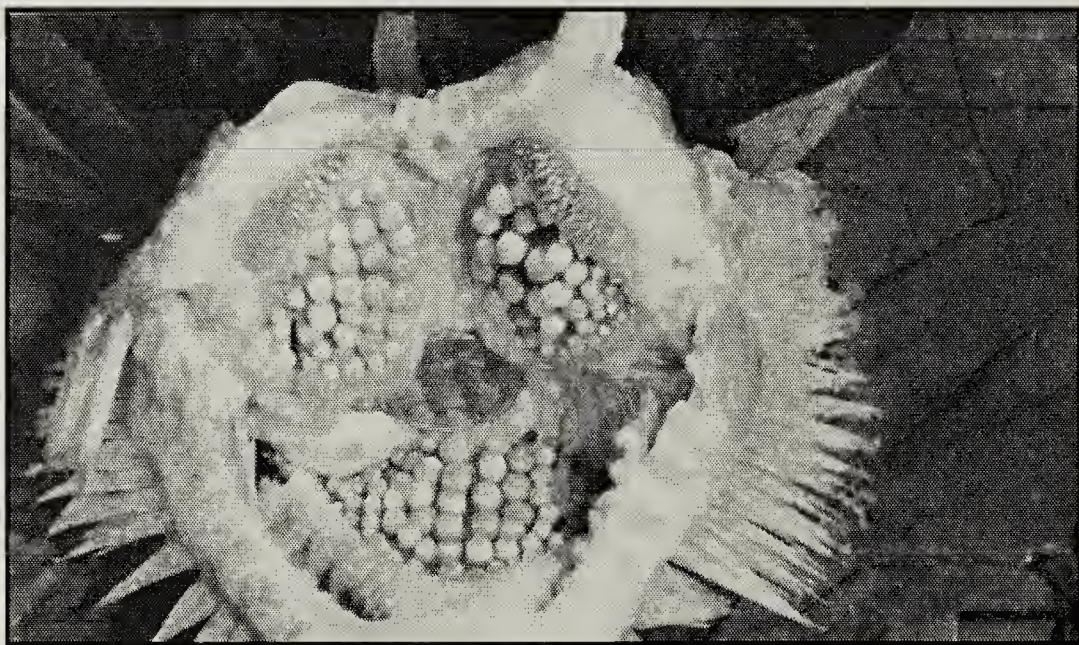
MARCH MYSTERY PHOTO



Who attaches a slender papery case to low vegetation in grassland regions? This one, about 3 cm long and empty, was photographed near Harris SK on 12 August 2003.

ANSWER TO THE DECEMBER MYSTERY PHOTO

The fish whose mouth you peer into is a Freshwater Drum (also known as Silver Bass, sheepshead and grunter, *Aplodinotus grunniens*). This fish has three sets of teeth (the many round and white cylinders that look a lot like human molars) designed to crush clams and snails, natural food items for the larger fish, especially those living in rivers. The teeth are attached to three fused pharyngeal arches that surround the opening to the stomach, here covered with a dime.



The fish pictured is a 66 cm long Freshwater Drum caught by angler Fern Clyde in the Valley River near Lake Dauphin, Manitoba in 2004. The photograph and the information about this fish was provided by William J. Walley of Dauphin, Manitoba.

No one hazarded a guess about the kind of fish and what it ate. Was this because we presented misinformation in the description?

Apparently this fish is *not* found in Saskatchewan as we learned from Kevin Murphy of the Resource Stewardship Branch of Saskatchewan Environment. Regarding the disjunct population that has been reported to occur in southwestern Saskatchewan, Kevin writes:

“The situation as I have come to understand it is this. Scott and Crossman led a team who culled distribution records and references to compile the maps for *Freshwater Fishes of Canada* published in 1973. Bev Scott has said that he knows there were revisions required and they worked with the best information they could get. One piece of information that was incorporated was Atton and Johnson’s listing of new fish records in Saskatchewan. Apparently a cursorial review led someone to take the species listing and ‘occurrence’ as evidence of an extant population. It was mapped in *Freshwater Fishes of Canada* as a pocket around Swift Current Creek and became gospel in the fisheries world. So much so, that when I started working for the province, I was asked to investigate the possibility of setting up a commercial fishery for freshwater drum.

“As to the source record, the Atlas of Saskatchewan Fish by Atton and Merkowsky (1983) mentioned the record as originating in: Atton, F.M. and R.P. Johnson, 1955. First records of eight species

of fishes in Saskatchewan. *Canadian Field Naturalist*. 69:3. 82-84 (July-September issue).

“Here is what the 1955 article says about *Aplodinotus grunniens* Rafinesque, 1819 (freshwater drum): ‘Two dead specimens were found on the bank of Swiftcurrent (*sic*) Creek at Swift Current on June 12, 1953. The northern distribution of this species does not seem to be clear, ...The present record is more surprising because Swiftcurrent Creek is a tributary of the South Saskatchewan River. The northern distribution of this species is thus extended into a drainage only remotely connected with that from which it was previously reported.’

“Perhaps wishful thinking. No other records of freshwater drum have ever been confirmed for Saskatchewan. Those fish on the bank could easily have been bait or lunch trucked in from Bismarck, ND. So what was postulated as a potential record in 1953, and which wouldn’t likely be accredited today (being based on dead fish found on land), ended up having me investigating a potential fishery in 1997!” - Kevin Murphy, Resource Stewardship Branch, Saskatchewan Environment, 3211 Albert Street, Regina SK, S4S 5W6, Phone: (306) 787-2941, E-mail: kmurphy@serm.gov.sk.ca

The editors thank William Walley and Kevin Murphy for information about this unusual fish. If anyone is aware of other possible records for Saskatchewan, Kevin would be interested in hearing about them. This appears to be the fish that got away.

ADVERTISEMENT

Leader Birding Festival in Leader, Saskatchewan
May 20-22, 2005

From Sandbars to Sandhills....Uniquely Prairie!

This is the theme the Town of Leader uses to describe the bird watching opportunities in the area. Local birders have identified almost 220 species of birds from the area. What makes the location unique are its contrasts: The Great Sandhills, with 1900 square kilometers of relatively undisturbed native prairie land, ideal for upland and grassland bird species and home to Burrowing Owls and Ferruginous Hawks, and the South Saskatchewan River valley, with its lush mature cottonwood forest.

The Leader area is a paradise for bird watchers, hikers and nature enthusiasts. There is a multitude of things to see and do, but this will mark the first ever Birding Festival.

If you've always wanted to see a Sharp-tailed Grouse dancing ground (lek), a Great Blue heronry or a Burrowing Owl or experience the morning calls of the Ring-necked Pheasant, the Leader Birding Festival is the place for you. In addition, good possibilities exist to see the Long-billed Curlew, Yellow-breasted Chat and even a Red-headed Woodpecker.

The Leader Birding Festival, organized by the Leader and District Tourism committee, offers guided tours or tour-on-your-own opportunities, special guest speakers, exhibits and displays, all focused on bird watching and related activities. We also hope to have on-site demonstrations by carvers and painters.

For your registration package and information, please contact The Leader Tourism committee at Box 484, Leader, Sask. S0N 1H0 or Kerry Wrishko at 306-628-3900 (res), or 306-628-3100 (bus), or wrishko.family@sasktel.net More information on Leader can also be found on the Leader website at www.leader.ca

Deadline for registrations is May 1, 2005, so register early!

(Sorry, we do not accept credit cards!)



“We found that while hoarding, magpies could carry up to 120 soaked wheat grains in their gular pouch and bill, combined. A total of 120 grains weigh 7.5 g; equivalent to 5.7 ml in volume....Prior to hiding food a magpie often spends a few moments selecting what is presumably the most suitable area. Then, before making the cache the bird usually tilts its head on one side and looks at the prospective cache site. This behaviour may allow the bird to identify the site and probably plays a crucial role in allowing the bird to recover the hidden food later. To make the cache the bill is pushed or hammered into the ground or grass, to form a small hole. The bill and pouch contents are then regurgitated into this and the beak is removed from the hole. The cache is then covered with a small tuft of grass, a stone, twig, or leaf. On average cache formation takes about ten seconds....Caches are invisible to the human eye.”

- T. R. Birkhead, *The Magpies*, p. 114-115

MEMBERSHIP APPLICATION FORM

☐ New Member ☐ Renewal

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☐ Change of Address: Please write in new address above

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Category	One Year	Three Year	Five Year
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Individual ☐ \$25 ☐ \$65 ☐ \$95

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* **Do you know** of any person interested in natural history and conservation who does not receive the *Blue Jay*? Please send their name and address and we will send a sample *Blue Jay* and an invitation to join our Society.

Renew by Phone!

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